PROCEEDINGS

OF THE

SCIENTIFIC MEETINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 9, 1868.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. P. L. Sclater exhibited a drawing (Plate I.) of a new species of Impeyan, lately named by M. Albert Geoffroy St.-Hilaire *Lophophorus l'huysi*[*], taken from the original specimen which had been recently purchased by the Trustees of the British Museum. This skin had been transmitted to France by M. Dabry, French Consul at Hankow, and was stated by its describer to have been obtained in Northern China. But, according to information Mr. Sclater had received from the British Consul at Hankow through Mr. J. J. Stone, the collection of which this bird formed a part had been really formed by one of the French Missionary priests resident at Llassa in Tibet, and its natural habitat was probably some portion of the northern slope of the great Himalayan range, where it would represent the *Lophophorus refulgens* of the southern facies of the same range.

Mr. Sclater gave the following short diagnoses of the two species:—

L. refulgens: *cristæ plumis spatulatis: cauda unicolore rufo-castanea:* ex mont. Himalayan. facie merid.

L. l'huysi: *cristæ plumis integris: cauda æneo-viridi, albo stellata:* ex mont. Himalayan. facie boreali.

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[*] Bull. Soc. Accl. sér. 2, t. iii. p. 223 (1866).

Mr. W. K. Parker, F.R.S., read a memoir on the osteology of the Kagu (*Rhinochetus jubatus*). The conclusion arrived at by Mr. Parker, from an examination of the osseous structure of this bird, was that the Kagu constituted the type of a distinct family belonging to Prof. Huxley's order Geranomorphæ, and was most nearly allied to *Psophia* and *Eurypyga*.

This paper will be published in the Society's 'Transactions.'

Professor Newton exhibited the humerus of a large species of Pelican from the lower peat of the Cambridgeshire Fens.

Though in size exceeding the corresponding bone in *Pelecanus onocrotalus*, the condition of the extremities showed the specimen to have been that of a young bird—a fact which rendered it not unlikely that the species was an inhabitant of the locality in which the bone was found. The specimen had been submitted to the inspection of M. Alphonse Milne-Edwards by Mr. H. Seeley, of the Woodwardian Museum at Cambridge (to which it belonged), and was about to be figured and described by the gentleman first named.

The following papers were read:—

1. Notes on Australian Zoology. By GERARD KREFFT, F.L.S., C.M.Z.S., Curator and Secretary of the Australian Museum at Sydney, New South Wales.

It has recently been stated* that the Short-tailed Wallaby of Western Australia (*Halmaturus brachyurus*) is the common species found in South-eastern Victoria; but having received one of these short-tailed specimens, shot at the Bass River in Victoria, from Professor McCoy, I find it to be identical with the Tasmanian *Halmaturus billardieri*. Skull, limbs, and tail are in two specimens, the one from Tasmania, the other from Victoria, exactly alike; but the colour of the fur of the Victorian species is somewhat lighter.

That this Wallaby should have been confounded with *H. brachyurus* is difficult to conceive, as the western species resembles in the shape of its skull and dentition the *Bettongiæ* much more than the Wallabies. In the whole group we never find so short a tail or hind foot as in *H. brachyurus*; and looking at the small incisor teeth, both above and below, the short lower jaw, the broad zygoma, and the strong and powerful premolar, it becomes apparent at once that this animal could not easily be mistaken for the *H. billardieri*, the latter having a long head, elongate tarsi, broad incisors (as large again as those of the western specimen), and a long and narrow zygomatic arch. Our best authorities, as Gilbert, Masters, and Waterhouse, state that *H. brachyurus* is peculiar to the west coast.

Again Prof. McCoy errs when he supposes that the western Tortoise (*Chelodina oblonga*) is found in the northern rivers of Victoria.

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* Prof. McCoy, "On the Recent Zoology and Palæontology of Victoria," 'Intercolonial Exhibition Essays,' 1866–67, No. 7. Melbourne: Blundell and Co.

It is a true western species; and the specific name of *longicollis* would be much better adapted to it: the Tortoise known so well as *C. longicollis* can shelter its head under the shell; whereas *C. oblonga* cannot do this, and there is scarcely a margin left to protect the head or neck.

We are told by the same authority that "the Batrachia of Victoria, with the exception of the Common Green Frog (*Ranhyla*?, M^cCoy; *Hyla aurea*, White), are rarely seen or heard, that the true *Hylæ* inhabit lofty gum-trees, and that the Swamp-Frogs of the genus *Limnodynastes* burrow into the sand during the day."

I need only refer to Dr. Günther's paper on the "Geographical Distribution of the Batrachians," to bear witness to the fact that this country is overrun with frogs, that they produce a deafening noise, which is frequently mistaken by those newly arrived for the song of birds and chirping of insects, and that after dark, when the dew is on the grass or after a shower of rain, the ground (even close to a city) is covered with many species of these animals. Most *Hylæ* retire under the bark of trees during the day, and come forth only after dark, when they make themselves sufficiently heard, and can easily be seen, by the light of a candle, hopping about in all directions. *Hyla aurea* has not the habit of *Rana*, as is stated by the same authority. No true *Rana* is found basking in the noonday sun miles away from water; but I have frequently observed *H. aurea* in such positions. As to Frogs burrowing into the sand during the day, this is simply against their nature.

As I am now speaking about reptiles, I wish to put myself right with my friend Dr. Günther, who gives the habitat of *Pseudechis australis* as "North-eastern Australia." In August 1857 I caught on the Murray a *red*-brown Snake with bright-yellow belly, which had the scales in 17 rows, anal bifid, ventrals 199, subcaudals 34 : $\frac{23}{23}$. Six years afterwards I received from Port Denison a similar specimen differing only in the subcaudals, which always vary in this genus (being 31 : $\frac{26}{26}$). Another point to be corrected is, that I have referred the common *Diemennia* met with in the vicinity of Sydney to *D. psammophis*. I have used this name because it was this southern and western species which Schlegel first described and figured as *Elaps psammophis*. The head (see Schlegel's Abbildungen, t. 46. f. 14) is decidedly that of the common *Diemennia* found in New South Wales, the snake to which Dr. Günther and Dr. Gray apply Schlegel's designation being found in Queensland only. I am quite willing to adopt the name of *D. reticulata* for the southern species, if it is desirable to do so, though Schlegel's name of *D. psammophis* was applied first to the reptile which has generally gone under the name of *D. reticulata*.

Before concluding, I wish to make a few remarks with regard to the *Myrmecobius fasciatus*, of which I have twice had an opportunity of examining females. This animal is supposed to have as many as eight nipples; and one observer, and a good one, states that he has actually seen seven young on the nipples. Now in both specimens which I have had before me only four nipples could be traced, and in one of these, in the Australian Museum Collection (in spirits), all four nipples are drawn, showing that four is probably the greatest number of young produced. I have examined the region of the pouch, which is represented by a skin-fold, with a powerful glass, but not a vestige of the remaining nipples could I discover. My specimen is full-grown; and if the other nipples were present, traces should be found of them, though ever so small. In young females of *Phascogale penicillata* the nipples are scarcely discernible to the naked eye, but are clearly shown as soon as a good lens is used.

2. On a Collection of Birds from the Pelew Islands.

By Dr. G. HARTLAUB, F.M.Z.S., and O. FINSCH.

(Plates II. & III.)

The Polynesian collectors of M. Johann Cæsar Godeffroy of Hamburg, to whose zealous efforts we owe already so many valuable materials and so much useful information concerning the zoology of the Pacific Islands, have of late sent a second collection from the Pelew group, an almost unknown locality, of which the geographical position between Mindanao and the Western Carolines is certainly a most interesting one. This second collection contains thirty-five species, but amongst them are neither rapacious birds nor parrots! Besides a number of widely distributed Indo- and Polynesian species, as *Carpophaga pacifica, Rallus pectoralis, Ortygometra quadristrigata, Tringa acuminata, Charadrius fulvus, Ardea sacra, Anas superciliosa, Sterna lunata, Gygis alba, Carbo melanoleucus,* &c., there are three well-known members of the avifauna of the Caroline and Marianne Islands,—*Halcyon albicilla, Myzomela rubratra,* and *Calornis kittlitzii*. For *Rallina fasciata* and *Nycticorax goisagi* the Philippines are the transitional station. For *Porphyrio melanotus*, a very common Australian and New-Zealand species, the Pelew Islands are a new habitat. As a very curious fact we must consider the occurrence of *Fuligula cristata*, a Duck widely distributed over the continents of Europe and Asia, but as yet not known from any of the Indian or Polynesian Islands.

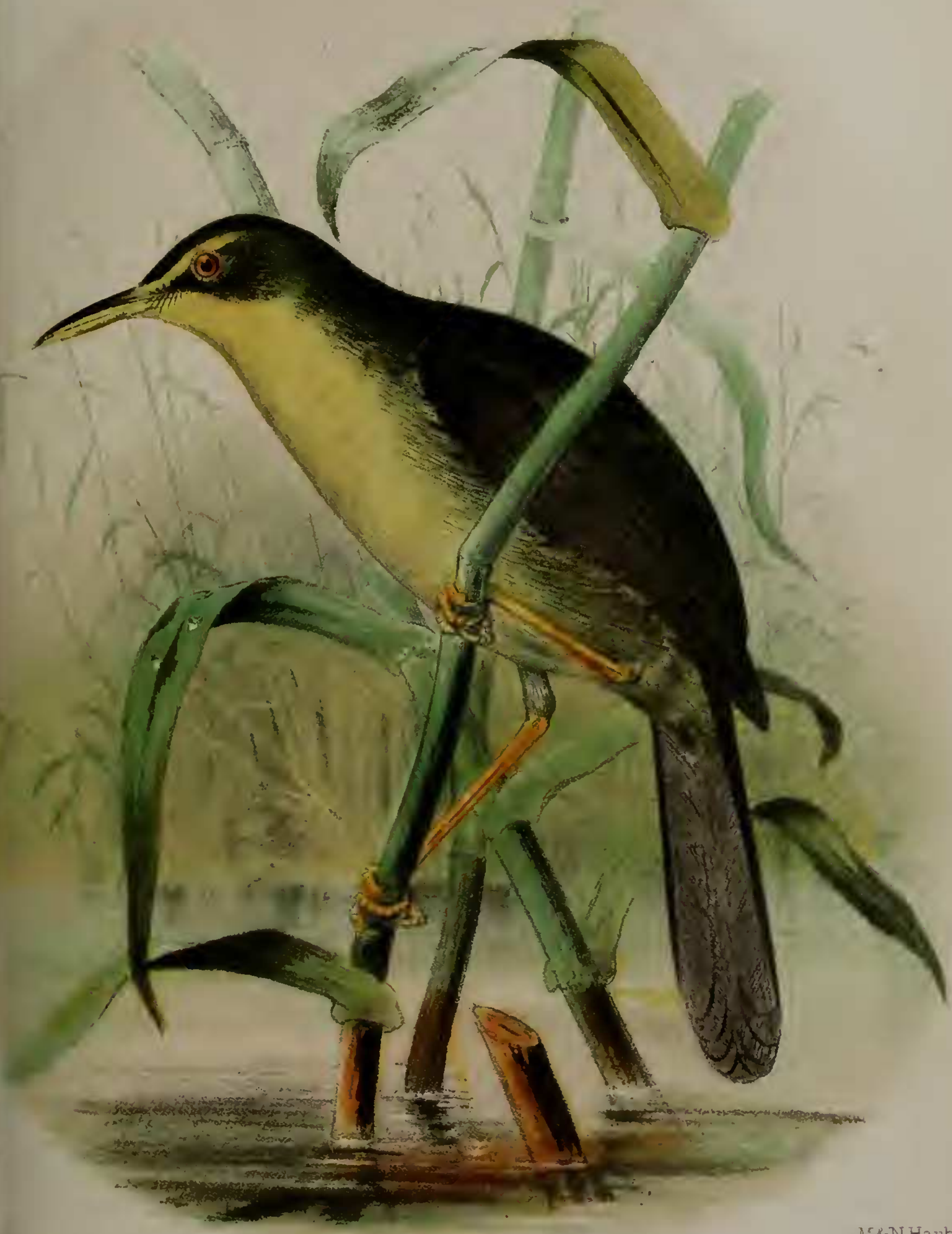
1. COLLOCALIA VANICORENSIS, Quoy.

2. HALCYON ALBICILLA, Less.

Three specimens, not quite adult, all having the crown and mantle with a greenish gloss.

3. HALCYON REICHENBACHII, Hartl. (*H. cinnamomina*, Reich. f. 3490, 3491).

One specimen, somewhat smaller than those figured by Reichenbach; the colour is quite the same. There remains a good deal of



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M & N Hanhart imp.

PSAMMATHIA ANNÆ.

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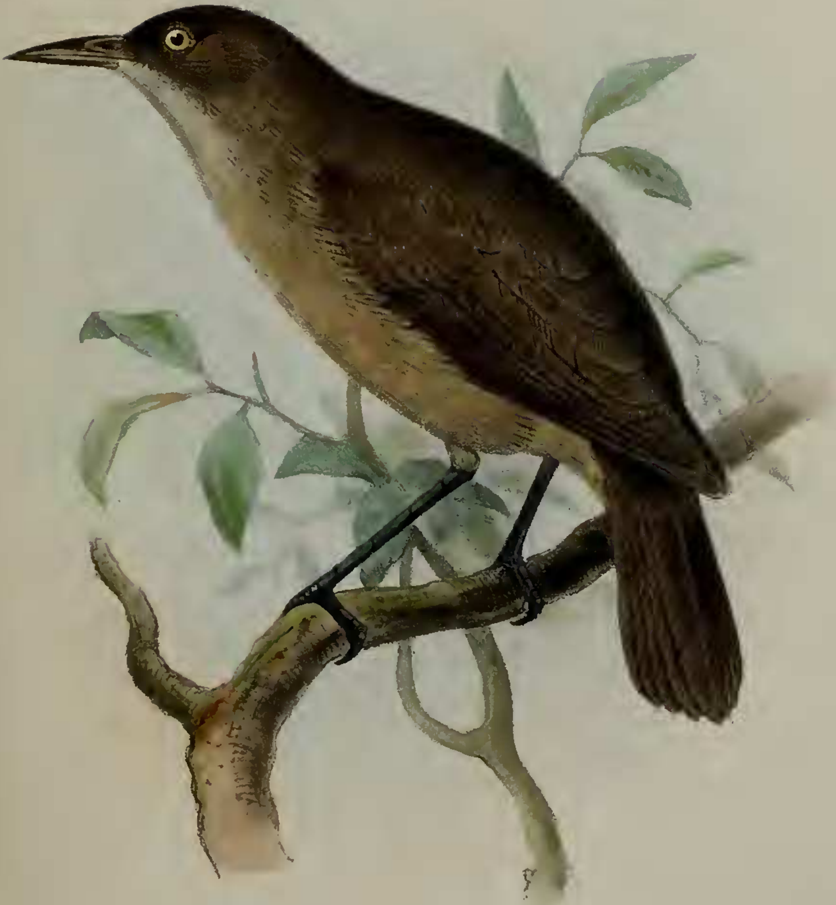


M & N Hanhart imp.

TEPHRAS FINSCHI.

uncertainty about this species, which may possibly turn out to be a younger state of *H. cinnamomina*, Sw., Reichenbach's indication of the habitat of his *H. cinnamomina*, the Marquesas Islands, being more than doubtful. The measurements of our specimen are:—Long. tot. 7¾″, rostr. 6½‴, alæ 3″ 3‴, caudæ 2″ 1‴, tars. 6½‴. In the middle of the rufous crown there are a number of dark greenish spots.

4. MYZOMELA RUBRATRA, Less.

Jun. av. *Obscure atro-fuscescens, remigibus et rectricibus fusco-nigricantibus, marginibus externis olivaceo-flavescentibus; sincipite, gulæ et genarum plumis obsolete scarlatino limbatis; pectore, abdomine, tergo, uropygio et tectricibus caudæ superioribus distinctius rubris.*

Long. alæ 2″ 6‴, caudæ 1″ 8½‴, rostr. 6‴, tars. 9‴.

The dimensions of the adult bird from the Pelews are exactly the same as those of the Caroline specimens.

PSAMATHIA, n. gen.

Char. gen.—Rostrum *elongatum, rectum, gracile, subulatum, compressiusculum, carinatum, subemarginatum, culmine dimidio apicali subarcuato, gonyde apice vix conspicue adscendente; naribus in fossa majore positis, linearibus; vibrissis vix ullis.* Alæ *breviusculæ, caudæ basin parum superantes, subrotundatæ, remige primo subspurio, pollicari, quarto longissimo, secundo et tertio subæquilongis.* Cauda *rotundata, longiuscula, rectricibus decem, subangustatis, mollibus.* Tarsus *subelongatus, caligatus. Pedes parvi; ungues debiles; digitus internus externo brevior.* Ptilosis *tergi et uropygii mollis, laxa, subelongata.*

5. PSAMATHIA ANNÆ, n. sp. (Plate II.)

Supra flavescenti-olivacea; remigibus et rectricibus fuscis, dorsi colore marginatis; subalaribus flavis; subtus flava, olivaceo adumbrata; gula purius flava; linea superciliari brevi, parum conspicua, flavida; mandibula flava, maxilla brunnea; pedibus pallide flavidis.

Long. 6½″, rostr. 8‴, alæ 2″ 9‴, caudæ 2″ 2‴, tars. 13½‴.

The generic position of this new form is in the *Calamoherpe* group: the feet are the same as in *Calamoherpe*; but the beak is weaker and slenderer, and the wings are very different. *Calamoherpe* has the first quill quite spurious, the third is the longest, and the second and sixth are subequal. In *Calamoherpe* there are twelve tail-feathers; in *Psamathia* I can find only ten. *Tatare* is a very different form, with scutellated tarsi, a very different structure of the plumage, a much more elongated beak, and a twelve-feathered tail. *Tatare syrinx* is a typical *Calamoherpe*. In the structure of the wing of *Psamathia* there seems to be a great resemblance to the genus *Arundinax* of Blyth, a form with which it is not in my power to compare it.

Tephras, Hartl., n. gen.

Char. gen.—Rostrum *mediocre, rectum, acutum, integerrimum, apice subcompresso, carinatum, culmine apicem versus subarcuato; vibrissis vix conspicuis.* Alæ *mediocres, caudæ basin superantes, rotundatæ vel subtruncatæ; remige primo et quarto, secundo et tertio subæqualibus.* Cauda *mediocris, subæqualis, rectricibus debilibus, angustatis, apicem versus subacuminatis.* Tarsus *mediocris, scutellatus; pedes parvi; digitus externus vix longior interno; ungues parvi, debiles.* Ptilosis *mollis.*

6. Tephras finschii, Hartl., n. sp. (Pl. III.)

Supra obsolete fusca, subtus pallide cinerascens: cauda et alis intensius fuscis; subalaribus, subcaudalibus et hypochondriis magis brunnescentibus; rostro et pedibus nigricantibus.

Long. 5¼″, rostr. 6‴, alæ 2″ 4‴, caudæ 1½″, tars. 9‴.

Tephras is a new form of the Zosteropine group. It differs from *Zosterops* in its differently formed beak, in the tail (which is rotundate in *Tephras*, emarginate in *Zosterops*), in the different form of the tail-feathers, in the less-pointed wing, and in the want of an eye-ring. There are some other genera with which *Tephras* agrees in many points, such as the West-African genus *Parinia*, and the Indian genera *Myzornis* and *Yuhina*; but it is decidedly different from these, as well as from other more or less allied forms. One specimen in good condition.

I have named this interesting new bird after my dear friend and coadjutor Otto Finsch, a young ornithologist whose well-known merits do not need any further eulogium.

7. Rectes tenebrosus, n. sp.

Av. jun. *Fuliginosus, subtus pallidior, subrufescens; capite nigricanti-fusco, pileo obscuriore; rostro fusco, basi pallidiore; pedibus plumbeis. Ptilosis mollis, laxa, sericea. Iris flava.*

Long. 8″, rostr. 9‴, alæ 3″ 7‴, caudæ 2″ 3‴, tars. 1″.

One specimen, not quite adult, and perhaps not quite typical.

8. Rhipidura lepida, n. sp.

Notæo toto abdomineque læte ferrugineis; subalaribus rufis; mento, gula fasciaque lata pectorali albis; macula gutturali magna rotundata nigra; rectricibus fuscis, apice latissime rufis; remigibus fuscis, minoribus dilute rufo limbatis; rostro et pedibus nigricantibus. Iris nigra.

Long. 6¾″, rostr. 5‴, alæ 3″, caudæ 3″ 1‴, tars. 11‴.

One adult specimen of this species, allied to *Rhipidura torrida* of Wallace, but certainly different.

9. Myiagra erythrops, n. sp.

Supra plumbea, subfuscescens, alis distinctius fuscescentibus; fronte et gastræo dilute rufis; subcaudalibus albis; subalari-

bus albido et nigricante variegatis; cauda fuscescente; rostro et pedibus nigris. Iris nigra.

Long. $4\frac{3}{4}''$, rostr. $6'''$, alæ $2\frac{1}{2}''$, caudæ $1''$ $10'''$, tars. $9'''$.

A fine typical species, perhaps not quite adult, or a female. One specimen in good condition.

10. Calornis kittlitzii, Finsch et Hartl. Beitr. z. F. Centr. Polyn. p. 109.

Jun. av. *Supra fuliginoso-nigricans, nitore metallico vix ullo; gastræi plumis fuliginosis, late albido marginatis; jugulo striato; abdomine medio distinctius albicante; rostro et pedibus nigris; cauda et alis dorso concoloribus.*

Long. alæ $4''$ $10'''$, caudæ $3''$ $3'''$, rostr. $9\frac{1}{3}'''$, tars. $13'''$ (ad.).

Seems to be very common; many specimens.

11. Ptilinopus pelewensis, n. sp.

Supra læte viridis, remigibus majoribus nigris, apice et margine externo late viridibus, minoribus intensius viridibus, limbo externo tenuissime flavo; rectricibus mediis viridibus, reliquis pogonio interno nigris, externo viridibus, omnibus apice late flavis; pileo circumscripte violacescenti-roseo, limbo marginali flavo, fronte pallidiore; capite reliquo colloque dilute flavo-virentibus; juguli plumis macula lata violacea transversim notatis; ventre medio saturate aurantiaco; crisso subflavo; subcaudalibus basi albis, medio flavis, apice late roseo-violacescentibus, limbo apicali tenuissime flavido; rostro plumbeo; pedibus pallidis.

Long. circa $9\frac{1}{2}''$, rostr. $6'''$, alæ $5''$ $2'''$, caudæ $2\frac{1}{2}''$, tars. $10'''$.

One adult specimen in good condition. Nearly allied to *Ptilinopus roseicapillus*, Less., from the Marianne Islands. But this latter species differs from it in having a distinct rose-red spot at the rictus, in the white throat, in the greyish-green colour of the head and neck, the whitish tips of the guttural plumes (which are without any purplish mark), in the red spots on the underbreast, the orange under tail-coverts, &c. &c. Another allied species is *Ptilinopus fasciatus*; but in this the hypogastrium and crissum are dark yellow, the purplish spot is on the underbreast, the under tail-coverts are of a reddish orange, the head, neck, and breast are whitish grey.

12. Carpophaga pacifica, Gm.

Exactly like specimens from the Navigator group.

13. Megapodius senex, Hartl.

14. Rallina fasciata, Raffl.

Av. jun. *Capite, collo et pectore dorso concoloribus, fuscis; plumis nonnullis castaneis in fronte et occipite conspicuis; gastræo obsolete fasciato; alis sicut in adulto.*

The hitherto known localities for this species are Sumatra, the Philippines, and the Pelew Islands.

15. Rallus pectoralis, Less.

16. Ortygometra quadristrigata, Horsf.

Av. jun. *Supra obscure olivaceo-fusca, cauda uropygioque obscurioribus; loris obscuris, striis laterum capitis albis minus distinctis; mento et gula albidis; abdomine medio albido; gastræo reliquo obsolete et pallide brunnescente; crisso, cruribus et subcaudalibus fulvis; rostro corneo-flavescente; pedibus corneo-grisescentibus.*
Long. alæ 3″ 7‴, rostr. 9‴, caudæ 2″, tars. 16‴.

17. Porphyrio melanotus, Temm.

A small local variety of the well-known Australian bird.
Long. rostr. 15–18‴, alæ 8″–8″ 5‴, tars. 2″ 9‴–3″, dig. med. 2″ 10‴–3″.
"Beak red; eyes and legs yellow."

18. Numenius phæopus, Lath.

No material differences from Javan specimens. The stripes on throat, breast, and neck are a little narrower, and more like those in *N. borealis.*

19. Actitis hypoleuca, L.

20. Tringa minuta, Leisl.=*T. albescens*, Gould.

Exactly like an Australian specimen in winter dress.
"Bill black; eyes yellow; legs blue."

21. Tringa acuminata, Horsf.

Limnocinclus acuminatus, Gould, Handb. Austr. ii. p. 254.

One specimen in summer plumage.

22. Strepsilas interpres, L.

23. Charadrius fulvus, Gm.

Six specimens, all alike in colour.
"Eye, bill, and feet black."

24. Ardea sacra, Gm.

A fine adult specimen, of a dark slate-colour, with a very narrow snow-white gular stripe. A young bird, like that from the Matelotas.

25. Nycticorax goisagi, Temm.

One specimen, exactly like the posterior figure on plate 25 of 'Fauna Japonica.'

26. Anas superciliosa, Gm.

Two specimens. The colour of the superciliary stripes, chin, throat, and sides of head are a little more rufescent than in a New-Zealand specimen in the Bremen collection.

27. **Fuligula cristata**, Ray.

One specimen, a young male, not different from the European bird. As mentioned above, the occurrence of this essentially continental species in the Pelew Islands is certainly a very curious fact.

28. **Puffinus opisthomelas**, Coues.

The under tail-coverts are uniformly black on both webs, without the light colour of the tips.

Long. tot. circa 13″, alæ 7″ 3‴, caudæ 3″ 2‴, tars. 16‴, dig. med. 16‴, rostr. 12‴.

29. **Sterna lunata**, Peale.

30. **Gygis alba** (Sparrm.).

Six specimens.

31. **Anous stolidus** (L.).

32. **Phaëton candidus**, Gr. (*flavirostris*, Br.).

33. **Dysporus piscator** (L.).

34. **Dysporus sula** (L.).

35. **Carbo melanoleucus**, Gray.

One adult specimen, not different from the adult Australian bird. "Eye and beak yellow; legs black." Five nestlings.

Pull. *Lanugine nigricante obtectus; collo nudo nigricante; capite, gula dimidioque basali mandibulæ sordide aurantiaco-brunnescentibus; rostro nigro.*

3. On a Collection of Fishes from Madagascar. By Lieut.-Colonel R. L. Playfair, F.Z.S., H.B.M. Consul-General in Algeria.

I have lately received from my friend M. Alfred Grandidier a small collection of Fishes made by him in Madagascar, with a request that I would send them, after identification, to the Museum of Natural History at Paris.

M. Grandidier is well known in France as an intelligent and adventurous oriental traveller. For the last three years he has been travelling amongst the islands on the east coast of Africa, particularly in Madagascar; and after a hurried visit to his native country, he has returned to complete his explorations in that interesting island.

In forwarding these fishes to me he states, "Of the four dried skins, I caught the two largest (*Lethrinus ramak* and *Otolithus argenteus*) in the sea at Cape St. Mary; the two smaller ones (*Mugil smithii* and *Chromis niloticus*) were found in a river at Pointe à Larrée, opposite to the little colony of St. Mary's Island. All the others, preserved in alcohol, were taken by me some miles up the river Mouroundava, on the west coast. Some of them live in salt aswell as in fresh water."

Most of these fishes have been already described in the 'Fishes of Zanzibar:' two only are new.

1. Ambassis productus, Guich. Cat. Poiss. Madag. Mém. Soc. Imp. Sc. Nat. Cherbourg, t. xii. p. 2.

Hab. Mouroundava River.

2. Dules fuscus, Cuv. & Val.

3. Therapon servus, Bl.

4. Scatophagus tetracanthus, Lacép.

5. Drepane punctata, Gm.

6. Chrysophrys hasta.

Sparus hasta, Bl. Schn. p. 275.
Coius datnia, Buch. Ham. Fishes of Ganges, p. 88, pl. 9. f. 29.
Chrysophrys longispinis, Cuv. & Val. vi. p. 116; Schleg. Faun. Japon. Poiss. p. 68, pl. 32.
C. berda, Cuv. & Val. *l. c.* p. 113.
C. calamara, Cant. Mal. Fish. p. 48 (not C. & V.).
C. hasta, Günth. Fish. i. p. 490.
Hab. Mouroundava River; Bay of Bengal; Chinese and Japanese Seas.

7. Lethrinus ramak, Forsk.

8. Synancea verrucosa, Schn.

9. Otolithus argentea, K. & v. H.

10. Naucrates ductor, L.

11. Equula dussumieri, Cuv. & Val. x. p. 77, pl. 283; Cuv. Règne An. Ill. Poiss. pl. 62. f. 1 (bad); Günth. Fish. ii. p. 500.
Hab. Mouroundava River; East-Indian Seas.

12. Gobius grandidierii, sp. n.

D. $6 \left| \frac{1}{9} \right.$. A. $\frac{1}{8}$. P. 20. L. lat. 35–36.

Eight longitudinal series of scales between the second dorsal and anal fins. The height of the body is contained five times and one-third in the total length; the length of the head of adults four times, and of smaller specimens thrice and a half in the same. Both the breadth and the length of the head are considerably greater than its height. Snout produced, more than four times the length of the diameter of the eye, rounded. Cleft of mouth oblique; lower jaw prominent. Eyes small, one-tenth of the length of the head; the space between them is less than twice their longitudinal diameter.

Cheeks swollen, with five or six longitudinal lines of minute pores. Head entirely naked, with the exception of a few small scales on the superior portion of the operculum. Teeth in jaws in villiform bands, with an inner series of larger ones, and an outer row of canines. First dorsal lower than body; the spine and all the rays flexible; the first and second rays somewhat produced. Longest ray of second dorsal (the last) shorter than the first of the anterior dorsal. Caudal rounded, rather longer than the length of head to posterior limb of præoperculum. Anal with the rays very much branched. None of the pectoral rays silk-like. Scales largest on the sides of body and tail, smallest on the belly and nape and around the root of pectorals, each is imbedded in a membranous base. Colour uniform brown; a black spot, smaller than the eye, at the base of the anterior dorsal, between the spine and the first ray; both dorsals with more or less distinct longitudinal rows of darker spots; ventrals and anal minutely punctulated with brown. Length 15¾ inches. Two specimens were obtained.

Hab. Mouroundava River.

13. PERIOPHTHALMUS KŒLREUTERI, C. & V.

The most interesting specimen in this collection is a new species of *Xiphogadus.* Unfortunately it is in a very bad state of preservation, having been partially digested in the stomach of another fish. Half of the lower jaw is wanting, and the ventral region is so much destroyed that it is impossible to ascertain the nature of the ventral fins; the other organs, however, are tolerably perfect.

14. XIPHOGADUS MADAGASCARIENSIS, sp. n.

D. 122. A. 96?

Body exceedingly elongate, the greatest height is contained fifty-four times in the total length, and the length of the head seventeen times in the same. Snout obtusely conical, shorter than the diameter of the eye, projecting beyond the cleft of the mouth. Tentacles none. Width of interorbital space rather more than half the diameter of the eye. Upper jaw with rather feeble canines, those in the lower jaw somewhat stronger. Dorsal commencing above the anterior margin of orbit and extending almost as far as the caudal fin; the anterior rays are longest, the first being thrice and a half the height of the body. The anal appears to commence below the twenty-seventh dorsal ray; it is lower than the dorsal, and extends slightly behind it. Caudal short, not much longer than the height of the body. Colour uniform brown. Length 11½ inches.

Hab. Mouroundava River.

15. MUGIL SMITHII.

Mugil microlepis, Smith, Ill. Zool. S. Afr. Pisc. pl. 28. f. 2 (not Rüpp. or Bleek.).

M. smithii, Günth. Fish. iii. p. 447.

Hab. Mouroundava River, on the west coast of Madagascar;

River at Pointe à Larrée, on the east coast; rivers and fresh waters of the Cape of Good Hope.

16. Gerres lineolatus, Günth.

17. Chromis niloticus, Hasselq.

18. Arius falcarius, Richards.

19. Lutodeira chanos, Forsk.

20. Elops machnata, Forsk.

21. Elops cyprinoides, Gm.

22. Anguilla johannæ, Günth.

4. Further Descriptions of New Species of Shells collected at Mauritius by Geoffrey Nevill, Esq. By Henry Adams, F.L.S.

(Plate IV.)

Stomatia variegata, H. Ad. (Pl. IV. fig. 1.)

S. *testa subrimata, ovato-oblonga, convexa, transversim costata, costis subdistantibus, interstitiis longitudinaliter striatis, rubra, albo variegata; spira prominula, apice acuto, sutura distincta; anfr.* $3\frac{1}{2}$, *convexis; apertura ovali, labio calloso, labro supra ultimum anfractuum paulum ascendente.*

Long. 9, lat. 7 mill.

Hab. Mauritius.

Discus vorticella, H. Ad. (Pl. IV. figs. 2, 2*a*.)

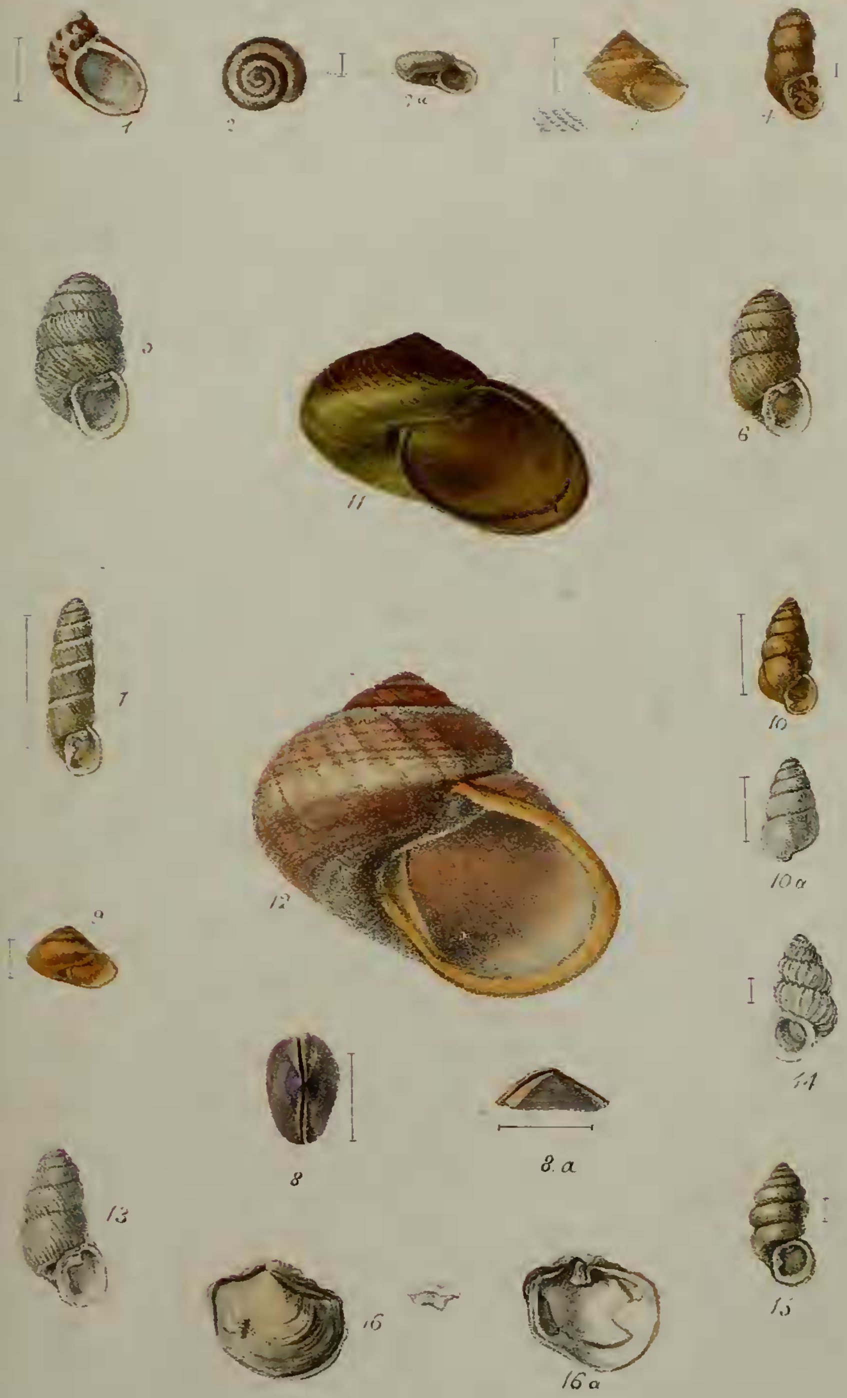
D. *testa aperte umbilicata, subdiscoidea, tenui, oblique confertissime costulato-striata, fulva; spira vix elevata, sutura distincta; anfr.* $4\frac{1}{2}$, *convexis, ultimo antice non descendente, superne subdepresso; umbilico perspectivo,* $\frac{1}{3}$ *diametri fere æquante; apertura obliqua, rotundato-lunari; perist. simplici, recto, marginibus conniventibus, columellari vix dilatato, dextro subsinuato.*

Diam. maj. $2\frac{1}{4}$, min. 2, alt. $\frac{3}{4}$ mill.

Hab. Bamboo, Mauritius.

Nanina (Rotula) cernica, H. Ad. (Pl. IV. fig. 3.)

N. *testa imperforata, trochiformi-depressa, tenuissima, membranacea, oblique longitudinaliter striata, lineis spiralibus minutis decussata, corneo-lutescente; spira depresso-conica, apice obtusulo, sutura leviter impressa; anfr.* 4, *planatis, ultimo descendente, acute carinato, basi convexo; apertura diagonali,*



G.B. Sowerby lith.

M & N Hanhart imp.

NEW SPECIES OF MOLLUSKS.

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7
NATURAL HISTORY

angulato-ovali; perist. simplici, acuto, recto, marginibus callo tenuissimo junctis, columellari arcuato.

Diam. maj. 10, min. 8, alt. 8 mill.

Hab. Mauritius.

This species is closely allied to *N. philyrina*, Morel., and *N. imperfecta*, Desh., which latter species has also been met with by Mr. Nevill at Mauritius.

PUPA (PUPILLA) EXIGUA, H. Ad. (Pl. IV. fig. 4.)

P. *testa profunde rimata, ovato-cylindrica, tenui, levissime striata, sericea, fusco-cornea; spira convexa, apice obtuso; anfr.* 5, *convexis, ultimo circa rimam obtuse angulato, pone aperturam angustiore, bisulcato; apertura truncato-ovata, verticali, laminis* 2 *parietalibus, dextra prominente, sinistra remota; perist. expansiusculo, margine dextro sinuato, plicis* 2 *intrantibus munito.*

Long. 1½, diam. ¾ mill.

Hab. Bamboo, Mauritius.

GIBBUS (GIBBULINA) MONDRAINI, H. Ad. (Pl. IV. fig. 5.)

G. *testa profunde arcuato-rimata, subcylindrica, solidiuscula, peroblique flexuoso-costata, sordide flavida; spira apice acuminato; anfr.* 7, *convexiusculis, ultimo antice ascendente, basi rotundato; apertura verticali, truncato-ovali, dente parietali pliciformi prope angulum munita; perist. subincrassato, expanso, reflexiusculo, marginibus callo junctis, dextro subsinuato.*

Long. 20, diam. 10 mill.; ap. 8 mill. longa, 5 mill. lata.

Hab. Mauritius.

This species appears to be recognized at Mauritius under the name of *mondraini*, which it is therefore desirable to retain.

GIBBUS (GIBBULINA) BARCLAYI, H. Ad. (Pl. IV. fig. 6.)

G. *testa profunde rimata, cylindrica, solidiuscula, costulis obliquis subremotis sculpta, flavida; spira cylindrica, in conum obtusum terminata, sutura distincta; anfr.* 7, *convexiusculis, ultimo antice vix ascendente, basi compresso; apertura subverticali, ovali, dente parietali mediocri prope angulum coarctata; perist. continuo, incrassato, superne subsinuoso, adnato, undique expanso, subreflexo.*

Long. 17, diam. 7 mill.

Hab. Mauritius.

GIBBUS (GIBBULINA) PRODUCTUS, H. Ad. (Pl. IV. fig. 7.)

G. *testa rimata, cylindracea, tenui, suboblique confertim costulata, sordide flava; spira cylindrica, apice convexo-conico, sutura distincta; anfr.* 8, *planiusculis, ultimo basi subcompresso; plica columellari profunda; apertura subobliqua, oblonga, dente parietali valido prope angulum coarctata; perist.*

incrassato, expansiusculo, marginibus callo crasso junctis, dextro subsinuato.

Long. 15, diam. 4 mill.; ap. 4 mill. longa, 3 lata.

Hab. Mauritius.

This species was received with the name *palangula* attached to it. But the true *palangula* is, according to M. Morelet, who has had an opportunity of seeing that species in Férussac's collection, the same as *teres*, Pfr. I have therefore considered it necessary to describe it as new.

Fam. GALEOMMIDÆ.

Genus THYREOPSIS, H. Ad.

Testa æquivalvis, æquilateralis, trigono-ovata, aperta; margine dorsali convexo, ad umbones subacuto. Cardo edentulus, ligamento interno sub umbonibus instructus.

THYREOPSIS CORALLIOPHILA, H. Ad. (Pl. IV. figs. 8, 8*a*.)

T. *testa solidiuscula, subpurpurea, ad margines pallidiore; superficie valvarum concentrice striata, marginibus dorsalibus paulum elevatis, rugosis; umbonibus parvis, lævibus, approximatis.*

Long. 10, alt. 4 mill.

Hab. Mauritius.

In this singular genus the valves are always widely separated; and when they most nearly approach one another, the shell may be likened to a depressed *Emarginula* cut through the centre lengthways. It appears to have more affinity with *Libratula*, Pease, than with *Galeomma*, but differs so much from the former as to render it desirable to constitute a new genus to receive it. Mr. Nevill informs me that it was found alive by his friend Dr. Power on a coral-reef at Mauritius, and that the animal could barely enter the shell. It would appear to be parasitic upon the coral, which is also probably the case with *Libratula*, as Mr. Pease states that he found that genus living on coral. In *Libratula* the animal does not extend beyond the shell.

Note.—In a former paper read by me on new species of Mauritian Shells, some observations on the animals by Mr. G. Nevill were appended to the descriptions, in which the expression "mantle" should correctly have been written "foot," and "foot" should have been "sole of foot."

5. Descriptions of some New Species of Land and Marine Shells. By HENRY ADAMS, F.L.S.

(Plate IV.)

MACROCHLAMYS TENUICULA, H. Ad. (Pl. IV. fig. 9.)

M. *testa aperte perforata, turbinata, tenui, sublævigata, levissime spiraliter striatula, rufo-cornea, diaphana, nitida; spira con-*

vexo-conoidea, apice obtuso, sutura marginata; anfr. 4½, *convexiusculis, ultimo non descendente, peripheria obsolete angulato, basi convexo; apertura obliqua, subrotundato-lunari; perist. recto, marginibus conniventibus, columellari ad perforationem reflexo.*

Diam. maj. 6, min. 5½, alt. 4½ mill.

Hab. Sattara, Bombay (*Coll. F. Layard*).

GLESSULA FUSCA, H. Ad. (Pl. IV. figs. 10, 10*a*.)

G. *testa oblongo-turrita, solidiuscula, lævigata, obscure striata, nitida, fusco-cornea; spira turrita, apice obtusiusculo, sutura impressa, crenulata; anfr.* 7, *convexiusculis, ultimo* ⅜ *testæ paulo superante; apertura parum obliqua, ovali; columella callosa, valde arcuata, oblique truncata; perist. recto, obtuso, albido marginato, marginibus callo tenui junctis.*

Long. 8½, diam. 4 mill.

Hab. Sattara, Bombay (*Coll. F. Layard*).

VITRINA ANGASI, H. Ad. (Pl. IV. fig. 11.)

Br

V. *testa imperforata, subdepressa, peripheria auriformi, tenui, superne plicato-striata, non nitente, rufo-fulva, subtus lævigata, nitida, olivacea; spira paulum elevata, sutura distincta, vix albo marginata; anfr.* 4, *convexiusculis, ultimo magno, ad peripheriam compresso; apertura valde obliqua, ovali, intus leviter margaritacea; perist. simplici, amplo, anguste membranaceo marginato, brevissime inflexo, marginibus conniventibus, dextro extrorsum valde dilatato, columellari arcuato.*

Diam. maj. 33, min. 26, alt. 20 mill.

Hab. Capengo, West Africa (*Coll. H. Adams*).

This fine species most nearly approaches *V. flemingii*, Pfr., from India; but the aperture is more ample and depressed, the right margin more dilated, the last whorl more compressed at the periphery, the spiral lines on the whorls are absent, and the colour of the upper portion is red-brown instead of olivaceous. It differs from the other large African species, *V. sowerbyana*, Pfr., in the last whorl being less angulate, in the spire being considerably more raised, and in the aperture being less oblong.

NANINA (XESTA) SULCIFERA, Barcl. MS. (Pl. IV. fig. 12.)

Br

N. *testa imperforata, semigloboso-conoidea, solida, spiraliter sulcis distantibus, et longitudinaliter striis obliquis confertis sculpta, fulvo-rubida; spira conoidea, apice acutiusculo, sutura leviter impressa; anfr.* 5, *convexiusculis, ultimo antice deflexo, magno, inflato, basi subconvexo; apertura valde obliqua, ovali; perist. simplici, incrassato, marginibus conniventibus, callo tenui junctis, columellari dilatato, excavato.*

Diam. maj. 40, min. 32, alt. 30 mill.

Hab. Montagne-au-Riz, Mauritius (*Coll. Barclay*).

"This interesting species has not, to my knowledge, been found alive, and would appear to be extinct. Fragments of the shell were first discovered by myself, several years since, among large boulders of blue basalt, about halfway up the Montagne-au-Riz, on the left-hand side of the road to Moka; and subsequently I found a few perfect specimens in the same locality, but all more or less bleached by exposure. During the remainder of my residence at Mauritius no other specimen was met with; but since my return to England, the one figured, which is in better condition than those I collected, was obtained on the same spot by E. Dupont, jun., Esq., and sent to me."—*D. Barclay.*

GIBBUS (GIBBULINA) CLAVULUS, H. Ad. (Pl. IV. fig. 13.)

G. *testa profunde rimata, ovata, tenuiuscula, oblique flexuoso costellata; spira attenuata, apice acuminato, sutura distincta; anfr.* 7–8, *convexiusculis, ultimo ad peripheriam angulato, basi subplanato, antice vix ascendente; apertura subverticali, ovali, dente parietali valido prope angulum coarctata; perist. continuo, soluto, subincrassato, undique late expanso.*

Long. 18, diam. 8 mill.

Hab. Mauritius (*Coll. Barclay*).

This species, I am informed, has been long known at Mauritius under the name of *clavulus*, which name I therefore with much pleasure retain for it.

PALAINA COXI, H. Ad. (Pl. IV. fig. 14.)

P. *testa sinistrorsa, subperforata, ovata, costulis compressis, subdistantibus sculpta, albida; spira convexo-conica, apice obtusiusculo, corneo; anfr.* 6, *convexis, ultimo angustiore, paulum ascendente; apertura subverticali, circulari; perist. duplici, externo valde expanso, breviter interrupto.*

Long. 3, diam. 1 mill.

Hab. Norfolk Island (*Coll. J. C. Cox*).

DIPLOMMATINA MINUTA, H. Ad. (Pl. IV. fig. 15.)

D. *testa dextrorsa, rimata, fusiformi-ovata, costulis debilibus confertis obliquis sculpta, pallide rufo-fusca; spira elongata, apice obtusiusculo; anfr.* 7, *convexis, antepenultimo tumidiore, ultimo antice paulum ascendente; apertura subverticali, truncato-rotundata, plica columellari conspicua; perist. duplici, interno porrecto, expansiusculo, externo subreflexo, marginibus callo expanso junctis, columellari sinuato, basi angulato.*

Long. 2, diam. $1\frac{3}{4}$ mill.

Hab. ——? (*Coll. H. Adams*).

Fam. ANATINIDÆ.

Genus PELOPIA, H. Ad.

Testa inæquivalvis, subovata, ventricosa, clausa, superficie valvarum scabra, umbonibus integris. Cardo sub umbonibus apophysibus duabus, horizontalibus, antice curvatis munitus; carti-

lago interna, ossiculo magno curvato instructa; ligamentum subinternum. Impressiones musculares conspicuæ, posterior magna, rotundata; linea pallialis sinuata.

This genus has much the appearance externally of *Ixartia*, Leach (*Rupicola*, Fleur. de Bellv., not Brisson). The hinge is most like that of *Periploma*, the ossicle being very large and strong; but the ligamental processes, although prominent, are without the strengthening ribs present in that genus, from which it also differs in the beaks not being fissured. From the distorted appearance of the shell, its habitat is probably in sponges or crevices of rocks.

Pelopia brevifrons, H. Ad. (Pl. IV. figs. 16, 16*a*.)

P. *testa solida, albida, inæquilaterali, irregulariter concentrice et rugose plicata; latere antico breviore, rotundato, latere postico angulato, margine superiore rectiusculo, inferiore arcuato; sinu palliali lato, brevi.*

Long. 14, alt. 13, lat. 8 mill.

Hab. ——? (*Coll. H. Adams*).

DESCRIPTION OF PLATE IV.

Fig. 1. *Stomatia variegata*, p. 12.
2, 2*a*. *Discus vorticella*, p. 12.
3. *Nanina* (*Rotula*) *cernica*, p. 12.
4. *Pupa* (*Pupilla*) *exigua*, p. 13.
5. *Gibbus* (*Gibbulina*) *mondraini*, p. 13.
6. —— (*Gibbulina*) *barclayi*, p. 13.
7. —— (*Gibbulina*) *productus*, p. 13.
8, 8*a*. *Thyrcopsis coralliophila*, p. 14.
9. *Macrochlamys tenuicula*, p. 14.
10, 10*a*. *Glessula fusca*, p. 15.
11. *Vitrina angasi*, p. 15.
12. *Nanina* (*Xesta*) *sulcifera*, p. 15.
13. *Gibbus* (*Gibbulina*) *clavulus*, p. 16.
14. *Palaina coxi*, p. 16.
15. *Diplommatina minuta*, p. 16.
16, 16*a*. *Pelopia brevifrons*, p. 17.

6. Synopsis of the Species of Pigs (*Suidæ*) in the British Museum. By Dr. J. Gray, F.R.S., V.P.Z.S., F.L.S.

The distribution of Swine into species and the species into genera and families is attended with considerable difficulty; this probably arises from three peculiarities of the group:—

1. That most of the wild or presumed wild species are easily reduced to a domestic or semidomestic condition.

2. That the domestic breeds return to their wild condition, even in countries situated far away from their native habitats, and that, under favourable circumstances, the newly enfranchised animals are able to hold their own against the native and colonial cultivators.

3. That the domestic, and possibly the wild species have a great facility in breeding together, having fertile offspring.

There are very few countries that have, or are presumed to have, a native race of Pigs, where some of the kinds are not kept in a more or less domestic state. This is even the case where the animal is regarded with disgust and never eaten as food, except by the lowest class of the inhabitants, as in India.

"Wild Hogs abound in Dukhun, and the male attains to a very great size. I am not satisfied that there is any specific difference between the European and Asiatic Wild Hogs. Every village abounds in hogs. The Village Hog is of the same colour as the wild animal, mostly a rusty black, and the only variations are slate-black or slate-brown; but it is not above two-thirds of the size of the latter. Tail never curled or spirally twisted. They dispute with the *Pariah dogs* the possession of the offal matter thrown out of the houses, and are the public scavengers."—*Sykes, P. Z. S.* 1831, p. 11.

"The Indian Wild Hog differs considerably from the German; the head of the former is longer and more pointed, and the plane of the forehead straight, while it is concave in the European; the ears of the former are small and pointed, in the latter larger and not so erect. The Indian is altogether a more active-looking animal. The German has a stronger and heavier appearance. The same differences are perceptible in the domesticated individuals of the two countries."—*Sykes, l. c.* p. 30.

In some of the islands of the Pacific the woods are stocked with wild swine that are the produce of the litter of one breeding sow that has been introduced.

As an instance of the facility and rapidity with which the Pig may be completely naturalized and become a pest, one may mention New Zealand, where some of the pigs introduced by the colonists have escaped and their offspring have spread themselves over the country, and are now a pest to the colonial farmer and breeder of sheep, destroying the crops of the former, and following the ewes and eating the lambs as they are dropped on the sheep-walk. A reward of so much per head is paid for all the pigs that are destroyed in several parts of that colony.

I have attempted to arrange the genera of Suidæ in natural groups. All the genera are well defined, and, I believe, distinct. The only doubtful one is my genus *Centuriosus*, which was established on an animal which is as yet only known in a domesticated state, and one that breeds with facility with the Domestic Pig of Europe, and the mules are fertile.

The species of Pigs have been very much misunderstood. Pigs belonging to very distinct genera have been considered varieties of the same species, or only domestic varieties of the Common Hog. The genera and species have been gradually unravelled.

As an example, I may here observe that Desmarest regards *Sus porcus* (*Potamochœrus porcus*) as only a domestic variety of *Sus scrofa*.

Fischer considers *Sus koiropotamus* (*Potamochœrus larvatus*) a synonym of *Sus larvatus*, the type of the genus *Phacochœrus*.

Fitzinger, in his Essay on the *Setifera*, in the 'Sitzungsberichte, of the Vienna Academy for 1864, has brought together what has been written on the subject, and has given a useful synopsis of the species as characterized by their external characters.

Unfortunately we have not any good works on the Domestic Pig, or clear history of the origin of several of the most approved breeds, some of which are most probably the result of the interbreeding of several varieties.

Desmarest, in his 'Mammifères,' gives a list of the domestic varieties divided into subvarieties (see Mamm. p. 390).

Youall ('Pig,' 1860) and Richardson ('On the Pigs and their Origin,' 1847) have written on the English breeds *.

Little information respecting the species of the family is to be obtained from travellers; they are generally satisfied with stating that a wild boar was observed, sometimes adding that it afforded good sport, and rarely make any observations respecting the domestic pigs. They often include under the name of "*wild boar*" species of different genera, as the French naturalists do under the name of *sanglier*. The skins of pigs are rarely preserved, except by professional collectors; and they only collect the wild specimens; so that the specimens in Museums are limited in number and kinds, and afford very imperfect materials for the systematic zoologist.

The domestic animals of the different countries inhabited by man, and especially the effect of the climate or local circumstances on those that have been introduced from other countries, have yet to be studied. There is no subject which naturalists living in a different country have so entirely neglected, because they have supposed that everything respecting it is known, while the truth is no animals are so imperfectly known or understood. Take, for instance, the Horse, which is so completely naturalized in North and South America, and so locally distributed in Africa—abundant, prosperous, and high-bred in some parts, very rare and, when present, greatly deteriorated in others, even in the same latitudes. It is the same with the Pig. Indeed these large animals, common to a great part of the inhabited world, are less known than the species of the rats, mice, squirrels, bats, and such small and comparatively unimportant animals, as far as man is concerned, who generally classes them with vermin.

Suborder II. SETIFERA.

Toes in pairs; the hinder pair shorter; the outer ones on the hind feet sometimes wanting. Stomach simple. Skin thick, with bristles. Nose conical, truncated at the end, enclosing a couple of supplementary bones between the intermaxillary and nasals, used in turning up the ground. The scrotum posterior, only slightly prominent, just under the vent.

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* Since this was written, I have been informed by Mr. Darwin that Hermann von Nathusius of Prussia has written on the Races of Pigs (1860), and published the figures of a number of skulls (1864); but I have not been able to see these works; they are not in the Museum Library, nor in those of the Zoological, Royal, and Linnean Societies.

Setifera, Illiger.
Pachydermata fissipedes, Latr. Règ. Anim. 1830, p. 596.
Setigera, Fitz. Sitz. Akad. Wiss. 1864.
Pachyderma paridigitata, Cuvier, Oss. Foss.; Burmeister, 1840–1845.
Ungulata isodactyla seu *artiodactyla*, Owen, Odont.

"The progressive increase of size in the molar teeth as they are situated further back in the mouth may also be noticed as a family characteristic, which, with the complication of the crown and development of the teeth, reaches its maximum in the Phacochœres."—*Owen, Odont.* 544.

SYNOPSIS OF THE FAMILIES AND GENERA.

I. *The premolars permanent, forming one series with the molars.*

Fam. 1. SUIDÆ.

Teeth 44 or 40:—Cutting-teeth $\frac{3-3}{3-3}$; canines triangular, upper recurved; premolars $\frac{4-4}{4-4}$ or $\frac{3-3}{3-3}$; molars $\frac{3-3}{3-3}$, hinder largest. Tail elongate, rarely absent. Teats 10, rarely 8. Toes 4.4; the hinder on each foot shorter, smaller.

Hab. Europe, Asia, and Africa; naturalized in America and the Pacific Islands.

A. TYPICAL SWINE (SUINA). Cutting-teeth 6/6; intermaxillary short; diastema between the cutting-teeth and grinders short; canines thick, spread out; the sheaths of the upper canines spreading out and then bent up at the end; premolars $\frac{4-4}{4-4}$; molars $\frac{3-3}{3-3}$.

a. WILD SWINE. Face elongate. The ears erect, moderate, hairy. Colour uniform or grizzled; young yellow, streaked. Skull elongated; facial line straight; forehead convex.

1. SUS. Ears ovate, hairy. Tail moderate, tufted at the end. Skull—nose convex, rounded and smooth on the sides above; concavity on the cheeks reaching to the edge of the orbit. Male with a ridge across the upper part of the base of the sheath of the canines.

2. PORCULA. Ears ovate, hairy. Tail rudimentary. Skull—nose tapering, rather thickened on the edge in front of the orbit. Canines small, spreading; upper not recurved, without any ridge on the sheath.

3. POTAMOCHŒRUS. Ears elongate, tapering, acute, and pencilled at the tips. Tail thick, high up on the haunches. Skull—nose

flattened above and rather thickened on the upper edge; concavity of the cheeks separated from the orbit by a broad ridge. Males with the upper edge of the nose warty in front, and with a large process from the upper part of the sheath of the canine tooth. Females with only a ridge across the base of the sheath of the canines.

b. DOMESTICATED SWINE. The ears more or less dependent, often very large. Colour black, white, or variegated; young like parents. Skull short; facial line sunken; forehead and top of nose flat; nose margined on the sides.

4. SCROFA. Face smooth or nearly so. Skull—sheath of upper canine with a longitudinal ridge at the base.

5. CENTURIOSUS. Face strongly concentrically wrinkled. Skull—sheath of upper canine with a large rounded tubercle at the base.

B. ABNORMAL SWINE (BABIRUSSINA). Cutting-teeth 4/6; intermaxilla and maxilla in front, forming a large diastema between the cutting-teeth and grinders; canines erect, parallel; the sheaths of the upper canines bent up from the base, and closely applied to the side of the jaw; premolars $\frac{3-3}{3-3}$, the front ones early deciduous.

6. BABIRUSSA.

Fam. 2. DICOTYLIDÆ.

Teeth 38:—Cutting-teeth $\frac{2-2}{3-3}$, the outer lower small; canines, upper bent downwards; grinders $\frac{6-6}{6-6}$. Back with a gland. Tail none. Teats 2. Toes 4 . 3; the outer hinder toes absent.

Hab. America.

1. NOTOPHORUS. Side of face in front of the orbit dilated, spread out.

2. DICOTYLES. Side of the face in front of the orbit flattened.

II. *The premolars deciduous, their place being occupied by the development of the molars.*

Fam. 3. PHACOCHŒRIDÆ.

Teeth variable:—Grinders 6/6; premolars $\frac{3-3}{3-3}$, early deciduous; canines subcylindrical, upper very large, recurved; the last molar very large, convex, divided into many conical cusps. Toes 4 . 4; two hinder on each foot small, shorter.

Hab. Africa.

1. PHACOCHŒRUS.

I. *The premolars permanent, forming with the molars a continuous series of teeth.*

Fam. 1. Suidæ.

Head pointed. Snout blunt, slender. Ears large. Body compressed. Legs slender. Skin covered with close bristly hairs. Grinders tubercular, with a few separate roots. Canines prismatic, triangular; upper recurved from the base. Teeth 44 or 40:—Cutting-teeth $\frac{3-3}{3-3}$; premolars $\frac{4-4}{4-4}$ or $\frac{2-2}{2-2}$. Tail elongate, rarely absent. Teats 10 or rarely 8. Young of wild races striped on the sides.

Suina, Gray, Ann. Phil. 1825; List Mamm. B. M. 284; Bonap. Prod. 5; Giebel, Säugth. 221.

Setigera, Fitz. Sitz. Akad. des Wiss. 1864, p. 383.

Suidæ, Owen, Odont. i. 543.

Suideæ, Lesson, N. Tab. R. A. 1842, p. 160.

Suidæ, § 3, Schinz, Syst. Verz. ii. 344.

The change in the dentition of the Pig is represented by De Blainville, 'Ostéographie, Onguligrades, *Sus*, t. 8, and by Owen, 'Odont.' 554, t. 140. Buffon (Hist. Nat. v. 110) erroneously says that the milk-teeth of the Pig are not changed and remain permanent. At page 181 he quotes (Aristotle, Des Animaux, lib. 2. chap. 1) further that the Pigs never loose any of their teeth. The crown of the grinders are many-lobed, especially the hinder one, which is larger than the rest.

A. Typical Swine (Suina). *Cutting-teeth $\frac{6}{6}$ (the outer upper rarely deciduous); intermaxilla short; diastema between the cutting-teeth and grinders short; canines thick, spreading out on sides of head; sheath of upper canine spreading out and bent up at the end; premolars $\frac{4-4}{4-4}$.*

The depression in the skull behind the hinder nasal opening is without any pits on the sides behind.

a. Wild Swine. *The ears erect, hairy. Colour of fur uniform or more or less grizzled. Young yellow, streaked. Skull elongate; facial line straight; forehead convex.*

1. Sus.

Face conical, simple, or with two or three small warts on each cheek. Ears ovate, hairy. Tail moderate, tufted at the end. Skull elongate; the forehead and upper part of nose rounded on the sides; upper part of the intermaxillary bone smooth; nose very long, tapering, convex, rounded and smooth on the sides above; concavity on the cheek deep, continued nearly to the orbit behind. Canines well developed, of upper jaw recurved; the sheath of the upper canine (of the males at least) with a longitudinal ridge across the upper part of the base.

Hab. Europe, Asia, and the Malay Islands.

Sus, Linn.; Gray, P. Z. S. 1852, p. 130; Owen, Odont. p. 534, t. 140. f. 1; Fitz. Sitz. Akad. der Wiss. 1864, p. 384; F. Cuv. Dent. Mamm. p. 208, t. 85.

The head and skull lengthened absolutely, and as compared with its width, as the animal increases in age, and especially as it reaches adult and old age. The nasal bones of the skull elongated as the animal increases in age. In the young they seldom extend beyond a line even with the larger foramen on the side of the face; but in the adult they are generally much produced behind it (P. Z. S. 1852, p. 131).

The descriptions and the figures of the two jaws in F. Cuvier's 'Dent. Mamm.' p. 208, do not agree; he says there are 14 grinders in each jaw, and divides them into 6 false molars and 8 molars in the upper, and 2 false and 6 molars in the lower; the 2 is perhaps a mistake for 8. The front lower premolar is far from the canine and second premolar; three upper and four lower premolars compressed; the last grinder elongate, longer than broad.

Fitzinger, in his monograph, divides the Pigs thus, according to the presence or absence of warts on the face:—

Warts none:—*Sus leucomystax, S. timorensis, S. vittatus, S. barbatus, S. cristatus, S. sennaariensis.*

Warts small, under eyes:—*S. scrofa.*

Warts three—one large, on the mandible, covered with long bristles, and a small one under the eye, and the other above the canines:—*S. verrucosus, S. celebensis.*

The Pigs may be divided geographically:—Europe, *S. scrofa*; Asia Minor, *S. libycus*; India, *S. cristatus, S. andamanensis*; Africa, *S. sennaariensis*; Malay Islands, *S. verrucosus, S. celebensis, S. barbatus, S. vittatus, S. timorensis*; Japan and Formosa, *S. leucomystax.*

† *Head moderate, with three small warts, and one at the back angle of lower jaw. Skull with the lower jaw above half as long again as the height at the occiput; concavity in front of orbit deep, and narrow behind. Nape erect.*

1. SUS VERRUCOSUS. B.M.

Ears moderate, nakedish. Fur with scattered bristles; yellowish or blackish brown, beneath yellowish white; bristles above the mandibular wart white. Warts three:—one on the cheek, large, covered with long bristles; another below the eye, smaller; a third above the canine teeth, small.

Sus verrucosus, Boie, MS.; S. Müller, Verhand. i. 42. p. 175, t. 28 (adult), t. 32. f. 1–4 (skull); Gerrard, Cat. Bones, B. M. 278.

S. scrofa, var., Giebel, Säugeth. p. 225.

Hab. Java; Borneo; Ceram. B.M.

The skulls in the British Museum are:—

No. 712*c*. An adult skull from Java. Length 16 inches, height at occiput 8¾ inches (see Müller, Verh. t. 32. f. 3, 4). Nose rather broad behind, tapering from the orbits, more compressed in front; concavity on cheek very deep; forehead convex; zygomatic arch very large, swollen, convex externally. The side of the lower jaw much swollen and prominent. The nose of this skull is much wider than that of the skull from Ceram (712*d*).

No. 1362*a*. An adult skull, without cutting-teeth and canines, and rather broken on the nose, received from Mr. Wallace as the skull of *S. vittatus* from Borneo, is very similar to no. 712*c* from Java, 14½ inches long, 8¾ inches high at the occiput. The forehead not quite so convex; but in almost all other respects they agree, except that the sides of the lower jaw are not so much swollen and convex. These skulls are known from those of *S. vittatus* by the concavity in the front of the orbit being very deep, ovate, and narrow behind, instead of broad and square (that is, ending in a nearly straight line).

Three other adult skulls, apparently belonging to the same species, were received without any habitat (but probably from Java or some other Dutch colony) from the Utrecht Museum. One is 15 inches long, 9½ inches high at the occiput; the second 16 inches long, 9¾ inches high at the occiput; the third, length 15, height at the occiput 8½ inches.

Var. *ceramica*. No. 712*d*. Skull, adult. A Wild Boar from Ceram, collected by Mr. Wallace. Length 15 inches, height at occiput 8 inches. Nose tapering, very narrow, compressed and deeply concave on each side in front of the orbits; the zygomatic arch large, swollen, and convex externally; the crest on the sheath of the upper canine is narrow and short.

No. 712*f*. An adult skull, obtained from the Utrecht Museum, named "*Sus larvatus*," without any habitat, which is very like 712*d* from Ceram, but considerably larger, being 16½ inches long and 8¾ inches high; the nose is broader and rather wider in front over the canines; the crest on the hinder part of the sheath of the upper canine is similar, smaller, but thicker.

In both skulls the crest on the canine is much shorter and less marked, and the sides of the lower jaw are swollen, but not so swollen and convex as in 712*c* from Java.

The specimen from Ceram (712*d*) differs from all the others in the nose being much narrower, more compressed, and apparently longer compared with the length of the brain-case.

Otherwise the four skulls from the Utrecht Museum and the one from Java (712*c*) are all very much alike.

Mr. Blyth considers his *Sus ceylonensis* (Journ. Asiat. Soc. Beng. xx. 173; *Sus zeylanensis*, Blyth, MS. photogr.) a variety of *S. barbatus*, which he says has been introduced from Borneo to Ceylon. Judging from the photograph of the skull, which has *Sus zeylanensis* written on it, it is much shorter and thicker than the skull of *S. barbatus*. The photograph is much more like that of *Sus verrucosus*.

†† *Head moderate, and without warts. Skull with the lower jaw about half as long again as high at the occiput; concavity on cheek in front of the orbit wide behind.*

a. *Skull—concavity on cheek in front of the orbit deep behind, and separated from the orbit by a well-marked ridge.*

2. SUS CELEBENSIS. B.M.

Black-brown above and below; bristles on upper mandibular wart white. Ears moderate, nakedish; fur with scattered bristles. "Head with three warts: the wart on the upper jaw large; the one under the eye and the other over the canine-teeth very small, indistinct."

Sus celebensis, S. Müller, Verhandl. i. pp. 172, 177, t. 28* (animal and skull); Gerrard, Cat. Bones, B. M. 278.
Sus verrucosus, β, Wagner, Schreb. Säugeth. Suppl. iv. 299.
Sus scrofa, var., Giebel, Säugeth. 235.
Hab. Celebes (*S. Müller*). B.M.

Skull rather more than half as long again as high; concavity on the cheek in front of the orbit very deep behind, separated from the orbit by a high narrow ridge; sheath of upper canine with large light crest-like ridges (see Müller, Verh. t. 28*. f. 2, 3).

3. SUS VITTATUS. B.M.

Yellowish or brown black, with a white streak from the end of the nose to the angle of the mandible. Ears moderate, nakedish; fur with scattered bristles. Head without any warts. Skull short; concavity in front of orbit broad and deep, near the orbit, separated from the orbit by a broad ridge.

Sus vittatus, Boie, MS.; S. Müller, Verhand. i. 42. 172, 173, t. 29 (animal), t. 32. f. 5 (skull); Blainv. Ostéogr. Onguligr. t. 5 (skull); P. Z. S. 1860, pp. 442, 443; Gerrard, Cat. Bones, B. M. 277.
Sus scrofa, var., Giebel, Säugeth. 225.
Hab. Java; Borneo; Amboyna; Macassar; Banka.

A skeleton (712 *e*) of a Pig, received from the Zoological Society under the name of the Javan Pig (*Sus verrucosus*), seems to belong to this species; but the concavity in front of the eye is scarcely as deep as usual, perhaps arising from its having been long in confinement.

No. 1362 *c*. Skull of an adult male of *Sus vittatus* from Amboyna, from Mr. Wallace. Nose rather wide before in front of the orbit, and then with parallel sides; concavity in front of orbit deep and large, separated from the front of the orbit by a narrow raised convex edge. Canines thick; crest at base strong. Length 12½, height at occiput 8 inches. The processes of the sheaths of the upper canines are curved back, sharp-edged above, and straight and truncated at the end.

No. 1362 *d*. Skull of adult, very like 1362 *c*, also from Amboyna, from Mr. Wallace's collection. Length 12, height 8½ inches. The concavity in the front of the orbit is deeper, and the ridge separating it from the cavity of the orbit more marked. The process of the sheath of the upper canine is similar, but rather larger, the upper edge is sharp-edged at the end, longer, more ovate, convex, and rugose.

No. 1362 *h*. Skull of an old male from Batchian, from Mr. Wallace's collection. Length 13, height at occiput 8¼ inches. Very like 1362 *d* from Amboyna; but the forehead is narrower and flatter, and the nose broader, being rather wider in front over the canines than in front of orbits; the concavity in front of the orbit similar and deep, and with well-marked outer orbital ridges. The process of the sheath of the upper canine is shorter, thicker, blunter, with a rounded end, and without any distinctly sharp crested front edge.

No. 1362 *b*. Skull of an adult, with well-worn grinders, a "Wild Boar from Java," from Mr. Wallace's collection. Length 13½, height 8½ inches. Very similar to *S. vittatus* from Amboyna (1362 *c* and 1362 *d*); but the nose of the skull is rather broader, especially in front, and the sheath of the upper canine is only furnished with a well-marked ridge behind. The concavity on the cheeks is very deep and wide in front, but not so well marked and deep on the hinder edge, where it is separated from the orbit by a wide flattish space.

No. 1362 *f*. Skull of an animal developing the hinder molar; the concavity in front of the orbit not so deep and well marked, as usual behind; zygomatic arch and lower jaw swollen on the sides; the ridge of the sheath of the canine slight and sharp-edged. From the Utrecht Museum; probably from Java or some of the Dutch colonies. Length 13, height 7 inches.

No. 1362 *g*. A skull of an adult, received from the Utrecht Museum without any habitat, but most probably from Java, is very like the preceding; it is 12¼ inches long and 7¾ inches high at the occiput.

4. SUS LEUCOMYSTAX. Japanese Pig. B.M.

Blackish brown; fur dense, bristly; streak on lower jaw and underside of body white. Ears rather large, densely pilose. Head without any wart.

Sus leucomystax, Temm. Fauna Japon. Mamm. 6, t. 20; Fitzinger, Setigera, 387; Swinhoe, P. Z. S. 1865, p. 466.

Sus scrofa, var., Giebel, Säugeth. 226.

Sus taivanus, Swinhoe, P. Z. S. 1864, p. 382, 1866, p. 419.

Porcula taivana, Swinhoe, P. Z. S. 1862, p. 360, 1864, p. 381.

Hab. Japan; Formosa (*Swinhoe*); Nagasaki (*Swinhoe*).

Mr. Swinhoe gave an account of the habits of the Pig in Formosa (P. Z. S. 1862, p. 361). It is a *Sus*, and not a *Porcula*.

Mr. Swinhoe (P. Z. S. 1862, p. 36) thinks this is a Wild Pig, the original stock of the Chinese Domestic Pig.

Mr. Blyth says this is the animal from which the Chinese Domestic Pig is supposed to be derived. There are three animals in the Zoological Gardens (Feb. 1867) which appear to be a domestic race from Formosa, although not much altered save in colouring from the wild animals (Blyth, Land and Water, Feb. 16, 1867, p. 84).

Mr. Fraser has just received from the island of Formosa, per the 'Maitland,' one Boar and one Sow of a red variety, and one Sow in pig, black variety, of a new species of Pig (*Sus taëvanus*, Swinhoe, Proc. Zool. Soc. Lond.) supposed to be the wild origin of the well-known Chinese Pig (Dec. 1867).

5. SUS CRISTATUS. B.M.

Bristles of forehead, occiput, and back elongate, forming a mane; cheeks with a beard. Yellowish brown, black-varied; beneath dirty white. Nose and extremity brownish. Ears moderate, nakedish, covered with scattered bristles. Head without any warts. Hoofs white.

Sus scrofa, Elliot, Madras Journ. x. 216, 1839, 1; Adams, P. Z. S. 1860, p. 531.

S. scrofa, var. *indicus*, Horsfield, Cat. Mamm. M. E. I. C. 193; Blainv. Ostéogr. t. 5.

Sus indicus, Gray, List Mamm. B. M. 185, 1840; Horsfield, P.Z.S. 1852, p. 130, 1856, p. 406; Cantor, Journ. Asiat. Soc. xv. 261; Schinz, Syn. Mamm. ii. 350; Blainv. Ostéogr. Onguligr. t. 5 (skull); P. Z. S. 1848, p. 73, 1850, p. 158, 1852, p. 130, 1860, p. 181; Gerrard, Cat. Bones, B. M. 277.

Sus bengalensis, Blyth, Journ. A. S. Bengal, xxix. 304.

Sus cristatus, Wagner, Münch. gel. Anzeig. lx. 535, 1839; Fitz. Sitz. Akad. d. Wiss. xix. 417, 1864, p. 389.

Sus aper, Hodgson, J. A. S. Beng. x. 911.

Sus affinis, Gray, Cat. Osteol. B. M. 71, 1847.

Sus scrofa, var. *isonotus*, Hodgson, Icon. B. M. t. 216.

Hab. India; Malabar (*Blainv.*); Nepal, Tarai and mountains (*Hodgson*); Banks of Punjab (*Adams*); Penang, Singapore, and Lanedy Island (*Fitzinger*).

Mr. Bryan Hodgson describes two varieties (see Journ. A. S. Bengal, i. pp. 245 & 911) as inhabiting the Tarai and mountains of Nepal:—1. *aipomus*: tusk large; forequarters high. 2. *isonotus*: tusk small; back nearly horizontal. There is a figure of the latter variety in his drawings in the British Museum (t. 216): the nape and back are much crested.

716 *u*. Skull of adult male. Length 15, height 9½ inches. "Marquis." Nepal; B. H. Hodgson, Esq.

716 *p*. Skull of adult male. Length 14, height 8¾ inches. Marked "Bilmareeah, *S. indicus*."

716 *k*. Skull of adult male. Length 15½, height 9¼ inches. Marked "*Sus babirusa*." Malabar (see Blainv. Ostéog. t. .).

716 *n*. Skull of adult male. Length 14½, height 8¾ inches.

716 *g*. Skull of adult male. Length 14, height 9 inches. "Marquis." Nepal; B. H. Hodgson.

716 *o*. Skull of adult male. Length 15½, height 9¼ inches. India; Sir John Boileau.

716 *f*. Skull of adult male. Length 15, height 8½ inches. Nepal; B. H. Hodgson, Esq.

716 *b*. Skull of adult male. Length 13, height 8¾ inches. India; General Hardwicke.

716 *y*. Skull of adult male. Length 14, height 9 inches. India; G. H. Money, Esq.

716 *x*. Skull of adult male, broken. India Museum, Zoological Society.

716 *l*. Skull of adult male. Length 13, height 9 inches. Nepal; Tarai; Professor Oldham.

716 *e*. Skull of adult male. Length 13½, height 8 inches. "Wild Boar of the plains." Nepal; B. H. Hodgson, Esq. Forehead nearly flat.

716 *d*. Skull of adult male. Length 14, height 8¾ inches. "Wild Boar of the Plains." Nepal; B. H. Hodgson.

716 *n*. Skull of adult female. Length 14¾, height 8½ inches. India; Professor Oldham.

716 *v*. Skull of nearly adult female. Length 12½, height 7½ inches. Neilgherries. *Sus affinis*, Gray, Cat. Osteol. 71, 1847.

716 *c*. Skull of young male? Length 13, height 7¼ inches. Tarai, Nepal; B. H. Hodgson, Esq.

716 *w*. Skull of young male. Length 10, height 6¾ inches. Tarai, Nepal; B. H. Hodgson, Esq. *Sus bengalensis*, Blyth (type).

716 *m*. Skull of young female. Length 10¼, height 7½ inches. Tarai, Nepal; Dr. Oldham.

716 *q*. Skull of young female. Length , height inches. Nepal; B. H. Hodgson. Nose much narrower and contracted behind in front of the orbit, perhaps the character of the female sex. The skulls of female exotic Pigs are very rare in collections.

This series of skulls differ in the depth of the concavity on the hinder part of the cheeks in front of the orbit. It is very deep, and with a well-defined wide ridge behind in 716 *o*, 716 *v*, and 716 *k*. It is less marked in the others, in different degrees of distinctness and depth.

In the skulls of the younger animals the concavity is very shallow behind, and gradually shelving off to the orbit, as in 716 *c*, 716 *w*, 716 *m*, 716 *q*, 716 *x*. It is one of these skulls (716 *w*) that Mr. Blyth marked as like his type of *S. bengalensis*.

The skull of this species is like that of *Sus verrucosus* from the Malay Islands; but all the skulls differ from the skulls of *S. verrucosus* in the flatness of the zygomatic arch, compared with the thick swollen form of the zygoma in all the skulls of that species. The sides of the lower jaw are convex and swollen, but not so much so as the lower jaw of *S. verrucosus*.

b. *Concavity on the cheeks of the skull in front of the orbit shallow behind, only separated from the orbit by a narrow ridge.*

6. SUS TIMORENSIS.

Yellowish or blackish brown, generally with a white streak from the nose to the angle of the jaw. Ears moderate, nakedish; fur with scattered bristles, maned. "Head without any warts." Skull (young)—the concavity in front of the orbit shallow behind, and only separated from the orbit by a slight ridge.

Sus timorensis, S. Müller, Verhand. i. 42, 173, 178, t. 31. f. 1–3; Gerrard, Cat. Bones, B. M. 278.

Sus vittatus, β, Wagner, Schreb. Säugeth. Suppl. iv.

Sus scrofa, var., Giebel, Säugeth. 225.

Sus, sp., *from Dampier Straits*, Sclater, List of Vert. Animals, Zool. Soc. ed. 3. 37. n. 235.

Hab. Timor and Rottie.

Like *S. vittatus*, but smaller.

1501 *a*. A skull of a young animal, very like the one figured by Müller (Verhand. t. 32. f. 2, 3); it is marked "young female *Babirussa*," from Mr. Wallace's collection. It is certainly not a Babirussa, having six upper cutting-teeth and short intermaxillaries, but is more probably a young female of the preceding. It has the concavity in front of the orbit shallow, and only separated from the orbit by a narrow ridge.

1501 *c*. Skull with the last grinder being developed (on one side only), perhaps young male? Inscribed "a Wild Pig, Makassar." Length 10½, height at occiput 6 inches. Nose broad behind, tapering in front from orbit; concavity in front of orbit large, not deep, and extending close up to the edge of the cavity; the hinder suture of the parietal bone is produced and angular behind.

1501 *b*. A rather larger skull, also developing the last molar, and probably a young male. A Wild Pig, Ternate, from Mr. Wallace's collection. Length 12½, height 5½ inches. It is very similar to the above in all particulars, particularly in the shallowness of the concavity in front of the orbits, and in the crest-like form of the ridge behind the base of the sheath of the upper canines; hinder suture of the parietal produced and rounded behind.

The shallowness of the concavity on the cheeks of these specimens may depend on the youth of the animal, as it is to be found in the skull of the young *Sus indicus*. It is not always a character of youth, as it is found shallow and shelving off behind in the skull of the very old *Sus andamanensis* and *S. scrofa*.

There is the skin and skeleton (1501 *d*) of a "Wild Pig from Dampier Straits, in the Eastern archipelago," that was brought to the Museum by Mr. Swinhoe. It does not appear to differ from *S. timorensis* of S. Müller; and the skull is very like the skull from Ternate (1501 *b*). A specimen was living in the Society's Gardens.

Mr. Bartlett thinks that it is "a domestic Pig running wild, because he has seen two specimens of them, both of which had white markings about the legs in a very irregular manner and other characters of the domestic Pig."

7. SUS ANDAMANENSIS. Andaman Pig.

The concavity of the cheeks in front of the orbit deeply concave, shallower behind, shelving off to the orbit, and only separated from the orbit by a narrow ridge; in the male the sheaths of the upper canines with a well-marked ridge; the concavity in front of the orbit very wide; in the female the concavity narrower, and sheaths of the canines not developed.

Sus andamanensis, Blyth, photogr. MS.; Sclater, List of Vert. Anim. Zool. Soc. ed. 3. 37.

Hab. Andaman Islands. B.M.

Living in the Gardens of the Society. Also a hybrid between the female Andaman Pig and the male Wild Pig from Dampier Straits.

A skull of an adult male in the British Museum, without lower jaw (no. 1497 *a*). The four front upper cutting-teeth very large, entire, square; the hinder lateral one very small, early deciduous. Lower cutting-teeth six, subequal, close together; upper canines very large, recurved, with a deep central ridge on the upper edge; concavity in front of the orbits very wide and deep; sheath produced, with a well-marked longitudinal crest on the upper reflexed edges.

A complete skull of an adult female (no. 1497 *b*), very similar to preceding, but concavity in front of the orbit narrower behind. Upper canine small, compressed, without any developed sheath; no ridge above its root. Lower canines very large, subtrigonal, with the first two rooted; premolar on the hinder part of its base separated a short distance from the second premolar. Upper cutting-teeth three, the first very large; the second on the right side, and both the hinder one have fallen out, and the cavity left is filled up.

The skull of this species is more nearly allied to the *Babirussa* than any others of the Pigs (*Sus*), the front of the canines being rather more produced than in other species, but not nearly so much so as in *Babirussa*; and the two hinder upper cutting-teeth are very small and often deciduous. In the skull of the adult male, for example, they are very small, but the pits they filled are present; in the adult female, they and the pits they filled are entirely obliterated. By a curious coincidence the second upper cutting-teeth on the right side of the jaws of the skulls of both the male and female animals are wanting, and the pits they filled are obliterated; but this may be only an accidental circumstance, as the tooth on the other side is well developed.

8. SUS SCROFA.

Ears large, densely hairy. Fur blackish brown, densely bristly. Wart under the eye small. Skull elongate, slender; the concavity on the cheeks in front of the orbits wide, shallow behind, shelving towards, and only separated from the orbit by a narrow ridge.

Sus aper, Brisson; Gray, P. Z. S. 1852, p. 130, 1856, p. 406.

Sus scrofa, Linn.; Giebel, Säugeth. 225; P. Z. S. 1856, p. 158, 1858, p. 531, 1860, pp. 183, 448; Blainv. Ostéogr. Onguligr. t. 1. f. 4–6; Fitz. Setigera, 384.

Sus setosus aper, Bodd. Elench. Anim. i. 157.
S. scrofa aper, Erxl. Syst. R. A. i. 176.
S. fasciatus, Gray, List Mamm. B. M. 184.
S. scrofa fasciatus, Schreb. S. 322 (jun.).
S. scrofa ferus, Gmel. Syst. Nat. 217; Gray, P. Z. S. 1862, p. 13, f. 1, 2, 3 (skull and palate); Blainv. Ostéogr. t. 4 (skull, ♂).
Sanglier, Buffon, H. N. v. 176, t. 24. f. 1 (skull).
Hab. Europe.

Var. Domesticated. Head short, slender. Ears erect, pointed. Limbs short, slender. Hair of body rather crisp, ferruginous or blackish brown. *Junior* fasciated.

Cochon turc, F. Cuvier, Dict. Sci. Nat. ix. 512.
Cochon turc ou de Mongolitz, Desm. Mamm. 391.
Sus scrofa domestica turcica, Fisher, Syn. 422.
? *Sus scrofa*, var. (Maltese Pig), Sclater, P. Z. S. 1862, p. 139.
Hab. Europe; Turkey; Hungary; Borneo; Vienna.

Skull of adult (713 *c*). Length 14, height 9 inches. With diseased teeth and alveoli. From the Zoological Gardens; probably from Germany. The concavity on the cheeks wide, shallow behind, and gradually shelving off to the orbit. The sheaths of the upper canines with a well-marked elevated ridge behind.

Skull of adult (713 *m*). Length 15, height 8 inches. From Germany.

Skull of adult (713 *f*). Length 15, height 7½ inches. From the Museum of the Zoological Society.

Skull of adult (713 *j*). Length 14, height 7¾ inches. Germany, from Dr. Günther.

Skull developing the last molar (713 *u*). Length 13, height 6½ inches. Germany, from Mr. Gerrard.

A skin and skeleton of a Wild Boar from Barbary (*Sus scrofa barbarus*, Sclater, P. Z. S. 1860, p. 443), received from the Zoological Gardens. Skull 712 *j* does not differ from the skull of the Wild Boar from Germany.

713 *k* and 713 *i*. Two skulls of young animals from the Zoological Society.

713 *g*. Skull of a nearly adult animal; purchased of a dealer.

9. SUS LIBYCUS.

Animal ——?

? *Sus scrofa*, Tristram, Nat. Hist. of Bible, p. 84.
Hab. Asia Minor (*Xantus*). Skull in the British Museum, presented by Sir Charles Fellows.

Skull of adult (713 *a*). Length 14½, height 8¼ inches. The concavity on the cheeks in front of the orbits very broad and very shallow, with a broad concavity in the middle; the hinder part moderately deep, separated from the orbit by a rather narrow well-marked prominent ridge. Nose narrow, and compressed over the lateral foramen. The sheath of the canine with only a slight ridge behind it.

The skull is very distinct from all the skulls of the Wild Boars from Germany in the British Museum.

The Wild Boar of the Holy Land, described by Mr. Tristram, may be the same. He observes:—

"Abundant in the wooded hills and maritime plains alike. Swarms in all the thickets by the Jordan and Dead Sea, and in the forest-country east of Jordan. Extends even to the bare wilderness of Judæa, and almost into the desert, where there is no cover, and where its only food is the roots of the desert bulbs."—*Tristram, P. Z. S.* 1866, p. 84.

10. SUS SENNAARENSIS.

Fur dense, bristly, dull olive-black and yellow-varied. Ears moderate, densely pilose. Head without any warts.

Sus sennaarensis, Fitz. Sitz. Akad. d. Wiss. xix. 365, 1864; Setigera, 388.

Sus larvatus, Fitz. Sitz. Akad. d. Wiss. x. 362.

? *Sus scrofa* (Egypt), Blainv. Ostéogr. t. 5 (skull).

? *Cochon des Nègres*, Buffon, H. N. Quad. v. 123.

Hab. North Africa; Sennaar; Kordofan; Sudan. Called "Quadruk" by the Arabs.

Dr. Murie says he has often seen and eaten the true Wild Boar of the genus *Sus* in Africa, as well as the *Potamochœrus* on the west coast. I have never seen any or the skull of one.

††† *Head very long, slender, without warts. The skull elongate, more than twice as long as high; concavity in front of the orbit deep. Cheeks bearded.* Eusus.

11. SUS BARBATUS. B.M.

Back covered with ochraceous, sides and beneath with black bristles; nose, extremities, and tuft at end of tail blackish. Skull much compressed, very long, slender. Ears moderate, nakedish. Fur with scattered bristles. Head very long, slender; sides of the jaws covered with crisp hairs; crown and occiput covered with short hairs. Head without any warts.

Sus barbatus, S. Müller, Van der Hoeven, Tijdschr. 1839, v. 149; Verhandl. i. 42, 173, 179, t. 30, 31; Gerrard, Cat. Bones B. M. 278; Fitzinger, Setigera, 392.

Sus scrofa, var., Giebel, Säugeth. 225.

Hab. Borneo. Called "Wite Warken."

712 *a*. Skull of adult, from Borneo, presented by J. Brooke, Esq. Length from end of nasal to occipital crest 19 inches, 9½ high at occiput. Exactly like the figure in Müller's 'Verhand.' t. 31. f. 45.

712. Skull of young animal changing its teeth, from Borneo. Capt. Sir E. Belcher. Length 11½ inches, 5 inches high at occiput. Nose very slender, attenuated; nose from the orbit double the length of the distance from the front of the orbit to the occiput; the zygomatic arch flat, thin.

2. PORCULA.

Head conical, moderate. Ears small, erect, hairy. Cheeks without any tubercles. Tail very short, rudimentary. Cutting-teeth $\frac{6}{6}$, two upper front largest, the lateral lower small; intermaxillary moderate, not produced; canines small, scarcely elevated above the other teeth, the upper one rather spread out, but not reflexed; premolars $\frac{4-4}{4-4}$.

Porcula, Hodgson; Gerrard, Cat. Bones B. M. 278, 1852; Fitz. Sitz. Akad. d. Wiss. 1864, p. 404.

The skull chiefly differs from *Sus* in being shorter and much smaller. The number and form of the teeth and of the intermaxillaries are the same as in *Sus*.

* *Back and nape maned.*

1. **PORCULA PAPUENSIS.** The Bene. B.M.

Ears moderate, erect, nakedish; internally white. Fur very bristly above, with scattered bristles beneath; bristles of nape and back longer, forming a black mane; brown and reddish above, black and white beneath.

Young. Dark brown, with five fulvous streaks.

Ben, Forrest, Voy. 97, t. 2, 3.

Sus papuensis, Lesson & Garn. Bull. Sci. Nat. vii. 96, 80; Duperrey, Voy. Coquille, Zool. i. t. 8; Gray, List Mamm. B. M. 185; P. Z. S. 1858, p. 107.

Porcula papuensis, Fitz. Sitz. Akad. d. Wiss. 1864, p. 23.

Papuan Hog, Low, Breeds of Domestic Anim. ii. 1.

Sus scrofa, var., Giebel, Säugeth. 226.

Hab. New Guinea. Called 'Ben' or 'Bene.'

Lesson and Garnot described the skull as having only five grinders on each side of each jaw; but this animal was probably not full-grown. Canines not longer than the other teeth. Tail very short.

** *Back and nape without any mane.*

2. **PORCULA SALVIANIA.** B.M.

Fur very bristly above, nakedish beneath; black-brown, grey- or yellowish-washed. Ears naked. Back without any crest.

Porcula salviania, Hodgson, Journ. Asiat. Soc. xvi. 423, 593, t. 12, 13, xvii. 480, t. 27; Horsfield, P. Z. S. 1853, p. 191; Fitz. Sitz. Akad. d. Wissen. 1864, p. 25.

Porcula salvania, Gerrard, Cat. Bones, 278; Gray, P. Z. S. 1856, p. 406, Mamm. Pl. XXXVII.

Sus scrofa, var., Giebel, Säugeth. 226.

Pygmy Hog of the Saul Forests, Hodgson.

Hab. Nepal; Sikkim; Saul Forests in Tarai.

Skull from the Saul Forests. Presented to the Museum (1077 *a*) by B. H. Hodgson, Esq. It is that of an animal developing the last molar. In form the skull is very like that of *Sus*, but shorter; the forehead is convex; the nose tapers in front of the orbit, is rather swollen and wide over the deeply concave cheeks; the concavity is deepest in the middle of the cheeks, and it is only separated from the orbit by the narrow edge of the orbit. The canines are small, the upper ones not recurved.

3. POTAMOCHŒRUS.

Face elongate, with a bony protuberance on each side, halfway between the nose and eyes. Ears elongate, suddenly tapering, and ending in a pencil of hairs. Tail thick, elongate, high up on the rump. Skull elongate; brain-case swollen; nose nearly of the same width the whole length, rounded above, with a rather thickened upper margin, and a deep concavity on the cheeks extending nearly to the front of the orbit, and partly over and nearly covering the malar process that supports the zygomatic arch.

Male. Swollen, and often warty on the sides in front. Sheath of the canine with a large broad process on the upper side of its base.

Female. Side of the nose simple, and the sheath of the canine with a well-marked ridge across the upper part of its base.

Teats four. Young four at a birth, with longitudinal stripes.

Koiropotamus, Gray, List Mamm. B. M. 185.

Choiropotamus, Gray, Ann. & Mag. N. H. 1852.

Potamochœrus, Gray, Ann. & Mag. N. H. xv. 66; Sclater, P. Z. S. 1860, p. 301; Fitz. Sitz. Akad. d. Wiss. 1864, p. 19.

Phascochœrus, sp., Jardine.

Phacochœrus, sp., Lesson in Tabl. R. A. 1841, p. 162.

1. POTAMOCHŒRUS AFRICANUS. Bosch Vark. B.M.

Ears densely hairy; internally white, with black edge and tuft. Fur black. Head and back whitish or yellowish; forehead and back black-varied; large spot beneath the eyes black.

Skull: male. The lateral tubercular ridge prominent, and elevated above the upper surface of the nose; lateral process on the base of the sheath of the upper canine broad, compressed, reaching to the level of the upper surface of the nose. Female with transverse ridge at the base of the sheath of the upper canine.

African wild boar, Daniel, African Scenery, t. 22.

Sus africanus, Schreb. Säugeth. i. 327; P. Z. S. 1852, p. 131; Blainv. in Laur. et Bazin, Anat. Phys. t. 11. f. 9 (teeth); Blainv. Ostéogr. t. 8. f. 1; Gray, Griffith, A. K. t.; Reichenb. Naturg. d. Pachyd. t. 33. f. 129.

Sus larvatus, F. Cuv. Mém. Mus. vii. 447, t. 22; A. Smith, S. A. Quart. Journ. 90; Blainv. Ostéogr. Ongulígr. t. (skull).

Sus koiropotamus, Desmoul. Dict. Class. H. N. vii. t. 1; P. Z. S. 1852, p. 131.

Choiropotamus africanus, Gray, Cat. Mamm. B. M. 185.

C. larvatus, Gray, Ann. & Mag. N. H. 1852.
Phacochœrus koiropotamus, Lesson, N. Tab. R. A. 162, 1841.
Sus koiropotamus, Desmoulins, Dict. Class. H. N. t. 7, ♀.
Sus choiropotamus, Reichenb. Naturg. d. Pachyd. t. 33. f. 48.
Potamochœrus larvatus, Gray, Ann. & Mag. N. H. xv. 66; Fitz. Sitz. Akad. d. Wissen. 1864, p. 19.
P. africanus, Gray, P. Z. S. 1852, p. 131, 1858, p. 58, 1860, p. 443; Gerrard, Cat. Bones, B. M. 279; Kirk, P. Z. S. 1864, p. 656.
Phascochœrus larvatus, Jardine, Nat. Libr. 232, t. 28.
Sanglier à masque, Sganzin, Mém. Strasb. iii. 1, t. 1.

Female. Skull with only a ridge across the base of the sheath of the upper canines.

Sus capensis, Gray; Gerrard, Cat. of Bones B. M. 277 (skull).
Hab. South Africa, called "Bosch Vark;" Central Africa; Zambesi delta, called "Njulvi" (*Kirk*).

"Scarcely any two specimens of this species exhibit the same colour; some are brownish black variegated with white, and others are almost entirely of a light reddish brown or rufous tint without the white variations; indeed such are the varieties that it is scarcely possible to say what are the most prevailing colours."—*A. Smith, S. A. Quart. Journ.* p. 90.

1. In the British Museum there is a skeleton (1364 *b*) of a specimen that lived several years in the Zoological Gardens. In the skull the malar process is very broad, reaching nearly to the level of the top of the nose; it is thin on each edge, and thickened near the outer hinder edge by a strong angular keel.

2. A skull (1364 *a*) that was purchased of Mr. Argent in 1851 as coming from South Africa. It has the process of the sheath of the canines nearly as long as the preceding (1364 *b*); but it is not so broad from side to side, and the outer surface is evenly rounded, without any keel. This skull very nearly resembles the one figured by De Blainville as that of *Sus larvatus* (Ostéograph. t. 5), and the skull figured by M. F. Cuvier (Mém. Mus.).

3. A skull from the Museum of Dr. de Jeude, probably from the Cape of Good Hope (1364 *c*).

The front of the lower jaw behind the canine is more dilated and swollen in *P. larvatus* (1364 *b*) than in the lower jaws of the two other skulls; but they all differ from each other more or less in this respect.

4. A skull with~~out~~ its lower jaw (715 *a*), was brought home by Captain Alexander from his Expedition to Damara, and presented to the British Museum. It is recorded in Mr. Gerrard's 'Catalogue of the Bones in the British Museum' as *Sus capensis* (p. 277). It is the skull of an adult animal, with the crown of the grinders much worn. It is probably the skull of a female, as it agrees with all the characters of *Potamochœrus*, but it has only a well-marked ridge across the upper part of the base of the sheath of the upper canine, and the upper margin of the nose is not dilated nor swollen. 17

2. **Potamochœrus porcus.** Red River-Hog. B.M.

Ears densely hairy; edges of ears and pencil white. Fur red-brown, beneath greyish white. Head and ears black; whiskers on the cheek, streak over and below the eyes, and dorsal mane white.

Skull.—Male, the prominence of the canine flat-topped and not raised above the surface of the nose; the lateral process of the sheath of the upper canine narrow at the base, dilated above, short, not reaching to the level of the upper surface of the nose. Female, with only a ridge across the base of the sheath of the upper canine.

Porcus guineensis, Marcgr. Bras. 230, fig. (good).

"*Cochon de guinée*, Buffon, H. N. v. 146."

Guinea Pig, Brown, Jam. 487.

Sus porcus, Linn. S. N. 1032.

Porc de guinée, Desm. Mamm. 391; Enc. Méth. t. 39. f. 1 (from Marcg.).

Sus scrofa, var. *porcus*, Fischer, Syn. 423.

Sus guineensis, Brisson, R. A. 109.

Sus africanus, Smith; Griffith, A. K. (not Desm.).

Sus penicillatus, Schinz, Monogr. d. Säugeth. t. 10; Rev. Zool. 1848, p. 152; Gray, P. Z. S. 1852, p. 132.

Choiropotamus pictus, Gray, Ann. & Mag. N. H. x. 280, 281.

Painted Pig of the Camaroons, Illustr. London News, fig., 1852.

Sus pictus, Wagner, Schreb. Säugeth. Supp. v. 302, 800.

Potamochœrus albifrons, Du Chaillu, Proc. Boston N. H. S. vii. 301, 1861; Travels, p. 422, t. 62; Gray, P. Z. S. 1861, p. 277.

Potamochœrus penicillatus, Gray, Ann. & Mag. N. H. xv. 66; P. Z. S. 1852, p. 131, t. 34; Gerrard, Cat. Bones, B. M. 279; Fitz. Kais. Akad. d. Wissen. xix. 365; Sclater, P. Z. S. 1861, p. 62, t. 12 (adult and young).

Hab. West Coast of Africa; Camaroons River; Guinea; naturalized in Brazil (*Marcgrave*).

Skeleton (no. 1363 *a*) of a male specimen, from the Camaroons, that lived for several years in the Society's Gardens. The skull of this animal is figured by Mr. Sclater in the 'Proceedings of the Zoological Society,' 1860, p. 301. The process on the base of the sheath of the canine is much shorter than in the skulls of *P. africanus* (1364 *a*, *b*); it does not reach the upper surface of the nose, is subcylindrical at the base, without any keel on its outer side, and broad at the end. It diverges much more from the side of the nose than in the skull from South Africa.

Two skulls, collected by Dr. Baikie in the interior of Africa (1363 *c* and 1363 *d*). They are very like the skull of the male animal from the Camaroons (1363 *a*). The process of the sheath of the upper canine in 1363 *c* is rather shorter and broader at the top than in that skull; and in 1363 *a* it is unfortunately broken off.

With these skulls Dr. Baikie brought another without the lower jaw (715 *b*), which is very like the others, only the side of the nose over the canines is not dilated, and there is only a slight ridge across the base of the upper surface of the sheath of the upper canine, as in the female from the Gardens (1363 *b*). The skull has adult dentition, and it is nearly of the same size, but not so aged, as the skull sent by Captain Alexander; it differs from it in the nose being more compressed and narrowed in front of the orbit. The condyles of this skull are large, and separated by a broad space beneath, as in all the other skulls of the genus, except that received from the Zoological Society.

A skeleton of a female, from the Camaroons, that lived in the Society's Gardens (Gerrard, Cat. Bones, no. 1363 *b*). In the 'Catalogue of Bones in the British Museum' the sexes of 1363 *a* and *b* are accidentally reversed. The skull had the dentition of an adult animal; the canines are very imperfectly developed, cylindrical, and smooth, and the sides flattened and grooved longitudinally beneath. The side of the nose of the skull is not swollen nor warty over the canines, and there is only a well-marked ridge at the base of the upper surface of the sheath of the upper canine.

This skull differs from the others of the genus I have compared it with in the small size of the occipital condyles, which are also closer together on their under edge. The hinder nasal opening is wide and rounded.

The three skulls also differ in the form of the upper jaws in front of the base of the canines. They are longer and narrower in the two skulls which have been named *P. larvatus* (1364 *a*, 1364 *b*) than they are in the skull from the Camaroons named *P. penicillatus* or *P. porcus* (1363 *a*). But the two skulls with the longer intermaxillaries differ from one another, the intermaxillaries of 1364 *b* being longer and narrower than in the skull 1364 *a*.

The ridges on the underside of the canine of *P. penicillatus* (1363 *b*) are fewer, coarser, and more irregular than they are on the canines of the two other skulls (1364 *a* and *b*). The back and front sides of the canines are rounded in 1363 *a*, while they are flat in 1364 *a* and *b*; but the two latter differ considerably in flatness.

This species has bred in the Society's Gardens, and reared the progeny. It will not breed with the Domestic Pig, or at least has not done so.

Marcgrave describes it as having a cyst on the navel, and says that it had been introduced by the negroes, and naturalized in Brazil.

I suppose that the Pig has not been found profitable, or was not fitted for the American climate, as the breeding of it has been discontinued. I have inquired of persons who have lived in different parts of Brazil; they all state that they have never seen or heard of the Painted Pig in that country; nor do I find any account of it in the modern works on the natural history of the country. Mr. J. Miers, F.R.S., has observed that Marcgrave only knew of the northern provinces of Brazil, then in possession of the Dutch, and that perhaps it still breeds there. My son and daughter, who travelled in those districts, and first made entomologists acquainted with the smaller Lepidoptera of the country, of which they collected very many new species, state that they never saw any Red Pig there.

3. POTAMOCHŒRUS ——.

Sanglier de Madagascar, Daubenton; Buffon, H. N. xiv. 396; Flacourt's Hist. Madagasc. 151.

Hab. Madagascar.

Mr. Sclater informs me that a species of this genus from Madagascar is living in the Jardin des Plantes at Paris. I am not aware that any specimens from that country have reached England.

b. DOMESTIC SWINE. *Face short. The ear more or less dependent, often very large. Animal black, white, or mottled. Young like parent (not yellow-streaked). Skull short; facial line sunken; forehead and upper surface of the nose flattened, more or less distinct, margined on the sides.*

I do not believe that the Domestic Pig is derived from the Wild Boar of Europe, any more than the Domestic Cat is derived from the Wild Cat of Scotland, or the Dog from the Wolf of Europe; nor do I know of any exotic species of Pig from which it is likely to have been derived.

There is no doubt that the Domestic Pig will breed with the Wild Boar, and that there are hybrid breeds which are more like the Wild Boar than the normal domestic animal. On the other hand, the wild species are often more or less domesticated in the countries they naturally inhabit; but these animals differ little from the wild progenitors, and are very different from the true domestic animals.

4. SCROFA.

Face conical, smooth, or nearly so. Skull—sheath of the canine with a more or less distinct longitudinal crest across the base.

SCROFA DOMESTICA.

Sus verres, Plinius, Hist. Nat. viii. 151.

Sus domesticus, Brisson, Règ. Anim. 106.

Sus scrofa domesticus, Erxleb. Syst. 179; Fischer, Syn. Mamm. 422.

Cochon, Buffon, H. N. v. 99.

Verrat, Buffon, H. N. v. 99, t. 17. f. 2 (t. 24. f. 3) (skull).

Hog, Penn.

Hab. Domesticated in most parts of the inhabited world.

Some varieties have small erect hairy ears and strong long legs like *wild swine.*

(1) *Cochon de Siam*, Buffon, v. 125, 137, t. 1500 (t. 24. f. 2, skull?).

Sus scrofa sinensis, Schreb. t. 324 (copied from Buffon; not *S. sinensis*, Brisson).

Black. The young black, without any streaks. Face tapering. Skull rather short; crown rather convex (*Buffon*).

Hab. Siam. I have not seen the variety.

Daubenton describes the skeleton (v. p. 181). This has most unaccountably been confused with the Chinese Pig by Desmarest, Fischer, and others, which has very short thin legs, with the belly almost to the ground. I have not seen this variety.

A young boar from Algiers. Rusty brown; hair black, with long rusty ends. Nose, orbits, edge of ears, and a longitudinal streak on the whiskers black. Chest nakedish. No warts on the cheeks. Ears moderate, densely hairy.

Hab. Algiers (*B.M.*; *Henry Christy, Esq.*).

Skull in the British Museum (no. 713 *r*). This animal lived some time in the Society's Gardens. The skull is short, with a flat forehead and nose like a Domestic Pig. It is, in many respects, very like the *Cochon de Siam* of Buffon.

(2) *Porc noir à jambe courte,* F. Cuv.

Sus scrofa domestica meridionalis, Fischer, Syn. Mamm. 422.

Hab. Italy.

Black. Ears small, nearly erect. A fold over the eyebrow.

Var. *sinensis.*

Sus scrofa sinensis, Brisson, R. A. 108; Erxl. 181.

Chinesische schwein, Linn. West Goth. 62.

Small. Black, white, or variegated. Back nakedish. Body very large; legs very short and thin.

A short-headed, swollen-cheeked, full-bodied Pig, with short thin legs, like our prize Pigs, was well known to the ancient Greeks. There are several representations in marble of such Pigs in the British Museum that were procured from the Temenos of Demeter Cnidus, and are inscribed "Pig sacred to Persephone," by Captain Spratt. These models chiefly differ from the form of the English prize Pig in the back being furnished with a well-marked, high compressed crest of bristles from the crown of the head to the tail. Similar Pigs are represented on Greek silver coins.

Long-legged, flat-sided sows with their young are represented among the reeds on the Assyrian Marbles in the Museum Collection.

The Pigs naturalized in Para and Pernambuco are black, like the Berkshire or Chinese breeds, with very thin legs, short nose, and thick cheeks. They were introduced from Portugal. In Rio they send the Pigs out in the marshy places to destroy the snakes before the negroes are turned in to cultivate the land; they eat the snakes greedily, and are said never to be injured by the bite of a snake, however poisonous.

Var. *Wattled,* with a cylindrical wattle on the hinder corner of the lower jaw on one or both sides.

Hab. Irish Greyhound Pig (*Richardson on Pigs,* 30).

Var. *Solid-hoofed Pigs,* with two front toes united into one hoof.

Sus scrofa monongulus, Linn. Anim. v. 461.

S. ungulis solidis, Plini. H. N. x. 146.

S. scrofa mononyx, Fischer, Syn. 423.

Solid-hoofed sow, Struthers, Edinb. N. P. Journ. 1863; Blainv. Ostéogr. p. 128; Darwin, Dom. Anim. ii. 75.

The British Museum has a series of thirteen skulls of the Domestic Pig; all have very similar characters (see Gray, P. Z. S. 1862, 16). They are known by the shortness of the skull, the side of the nose being bluntly keeled; the cheeks concave, the concavity extending up to the edge of the orbit, and being separated from the aperture of the orbit by only a narrow ridge; the frontal line is more or less concave.

The skull of the male has a distinctly marked transverse ridge on the base of the sheath of the upper canine; in the young male it is only slightly indicated; in the skull of the female and young pigs it is not to be seen.

717 *a*. Skull of an old male from Africa, from the Gambia (*Sus gambianus*, Gray, List Mamm. B. M.; Gerrard, Cat. Bones B. M. 277). Forehead flat (see *Sus scrofa hybridus*, West-African Pig, Sclater, P. Z. S. 1862, p. 325).

713 *h*. Skull of an old male, from Africa. Forehead rather convex.

713 *r*. A very similar skull of an old male, purchased at a sale.

713 *o* and 713 *t*. Two nearly adult skulls, from the Museum of Dr. de Jende.

713 *p*. A skull of an old specimen, diseased, from the Zoological Society's Gardens.

716 *r*. A skull of a young specimen from India, from the Museum of the Zoological Society; inscribed with Indian characters. Named *Sus indicus*.

713 *q*. Skull of a young Berkshire Sow.

713 *e*. Skull of a young Domestic Pig.

713 *s*. The skull of a very young Domestic Pig. This skull has an abnormality in the cutting-teeth. There are six in the upper jaw; the first two are in their natural position, and in their proper place; the two hinder ones on each side are close together, just in front of the suture of the intermaxillary bone, the front one being elongated, slender, conical, and bent outwards, and the hinder one short, broad, conical, and compressed. The canine on the right side is double; that is to say, the new one has appeared before the old one has been shed.

713 *w*. Skull developing its last grinder, from the Museum of Dr. de Jende.

713 *t*. Skull of an adult, with the nose of the skull more elongated; from the Utrecht Collection. Probably half-bred between the Wild Boar and the Domestic Sow; it has the flat forehead, concave facial line, and the keeled side to the nose before the orbit, of the Domestic Pig, and the length of the face like the wild breeds.

5. Centuriosus.

Face deeply and symmetrically furrowed. Ears very large, falling down. Tail moderate. Skull—forehead and upper part of the nose flat, smooth, keeled on the sides; sides of the cheek concave; the sheath of the upper canine tubercular above; upper canines coming out in the lower edge of the jaws, and then bent upwards; palate broad.

Centuriosus, Gray, P. Z. S. 1862, p. 17.
Gyrosus, Gray; Gerrard, Cat. Bones B. M. 1862.
Ptychochœrus, Fitz. Sitz. Akad. d. Wissen. 1864.

This genus is most allied to *Potamochœrus* in the form of the skull, and to *Sus* in its external appearance. It is not likely to be a cross-breed between the two genera.

CENTURIOSUS PLICICEPS. B.M.

Ears large, flat, rounded at the end, pendulous. Fur with scattered black bristles. Skin blackish grey. Limbs and beneath whitish.

Sus (*Centuriosus*) *pliciceps*, Gray, P. Z. S. 1861, p. 263, 1862, p. 14, fig. of skull, p. 15, fig. of palate.
Sus (*Gyrosus*) *pliciceps*, Gray, MS.; Gerrard, Cat. Bones B. M. p. 278; P. Z. S. 1864, pp. 160, 383.
Sus scrofa, var. *pliciceps*, Sclater, List Vert. Anim. Gard. Zool. Soc. ed. 3. 36; P. Z. S. 1862, p. 322.
Ptychochœrus plicifrons, Fitz. Sitz. Akad. d. Wissen. 1864, p. 409; Führ. z. Zool. Garten z. München, p. 23.
Japanese masked pig, Bartlett, P. Z. S. 1861, p. 263 (figures); Illustr. London News, 1862, no. 1126 (figure).
Chinesische Maskenschwein, Schmidt, Zool. Gart. 1862, p. 80.
Hab. Japan; China. Male in the Gardens of the Zoological Society in 1864.

Evidently a domestic variety; the ears are pendulous, like those of most domestic animals. The young are of a uniform colour like the parents, and not striped like the wild species.

The skull in the British Museum (no. 1387 *a*), figured in the 'Proc. Zool. Soc.' 1862, is very unlike any of the skulls of the Domestic Pig in the Museum Collection, especially in the breadth of the nose and the rounder form of the tubercle on the base of the sheath of the upper canine.

Skeleton of a very old animal (no. 1387 *b*), from the Zoological Gardens. The forehead between the orbits deeply depressed; nasal bones very flat.

B. ABNORMAL SWINE (*Babirussina*).

Cutting-teeth 4/6; *intermaxillary and maxilla produced in front, forming a long diastema between the cutting-teeth and the grinders. Canines erect, parallel; the sheath of the upper canine bent up from the base, and closely applied to the side of the jaw. Premolars* $\frac{3-3}{3-3}$; *the front one very small, and early deciduous.*

There are two large oblong deep cavities at the hinder part of the depression behind the hinder nasal opening, separated from each other by a sharp, high, central, longitudinal lamina, that are not to be observed in the skulls of other *Suidæ*.

These depressions seem to become deeper as the animal increases in age. I have only observed them in specimens which have well-developed canines; they may be confined to the males.

There is in the British Museum a small skull, obtained from Holland (718 *o*), of a half-grown animal, which has developed its second true grinder, and which is without canines, only having a slight ridge on the bone at the place where they are developed in the other skulls. The skull has no indication of the depression in the hinder part of the hinder nasal opening, and the grinders are much smaller than those in any other skull. Is it the skull of a female, or does it belong to a distinct species allied to *Babirussa alfurus*?

The prolongation of the skull in front and the length of the separation of the cutting-teeth from the grinders are produced by the prolongation of the maxilla in front and the elongation of the intermaxilla behind. The first premolar is very early deciduous; it is only to be observed in skulls of young animals; but the spot where it was placed is sometimes indicated by a porous structure in the full-grown skull, as in specimen no. 718 *l*.

6. Babirussa.

Face conical, simple. Ears rounded. Tail and limbs slender. Skull conical; nose elongate, simple; the hinder upper part of the intermaxillary bones smooth; the upper cutting-teeth large, equal, equidistant; the sheath of the upper canine bent upwards from the base at the side of the jaw; canines arched backwards, sometimes even spirally recurved; lower premolar compressed.

Babirousa, Gray, Ann. Phil. 1825.
Babiroussa, F. Cuv. Dent. Mam. 212, t. 86*.
Babirussa, F. Cuv. Dent. Mam.; Lesson, Man. 338; Gray, List Mamm. B. M. 185; P. Z. S. 1852, p. 131; Gerrard, Cat. Bones B. M. 278.
Porcus, Wagler, Syst. 17; Fitz. Sitz. Akad. Wissen. 1864, p. 435.

M. F. Cuvier, when adopting this genus, described and figured the grinders as small and nearly equal-sided (see Dent. Mamm. t.); but this is a mistake; they are as large and elongate as the grinders of the other Pigs, compared with the size of the skull. This genus was first distinctly characterized in the 'P. Z. S.' 1852, p. 131.

Babirussa alfurus. B.M.

"Fur ashy; dorsal streak yellowish brown; beneath ferruginous-washed."

Aper orientalis, Brisson, Règn. Anim. 110.
Sus babyrussa, Linn. S. N. 50; Quoy & Gaim. Voy. Astrol. Zool. i. 125, t. 22, 23; Isis, 1836, t. 13; Schinz, Monogr. iv. 5, t. 5. f. *a–d*; Blainv. Ostéogr. t. 2, t. 5 (skull, ♂).
Sus baberoussa, Bodd. Elench. i. 157.

Sus babirussa, Schreb. Säugeth. t. 328; Blainv. Ostéog. Onguligr. t. 2 (skeleton, ♀), t. 5. f. 7 (skull and teeth).

Babirussa alfurus, Lesson, Mamm. 338; Gray, List Mamm. B.M. 185; Sclater, P. Z. S. 1860, p. 443, t. 83 (from life); Gerrard, Cat. Bones B. M. 279.

Porcus babyrussa, Wagler, Syst. 17; Schreb. Säugeth. Supp. v. 509; Fitz. Sitz. Akad. d.Wiss. 1864, p. 43; Giebel, Säugeth. 232.

Porcus babirussa, Reichb. Nat. Pachyd. 57, t. 54. f. 199, 197.

Aper in India, Plinius, Hist. Nat. vii. 52.

Horned hog, Green, Mus. R. S. 27, t. 1 (skull).

Babyroussa, Bontius, Ind. Orient. t. 1. fig.

Babyrussa, Jacob, Mus.

Babi roesa, Seba, Thes. i. t. 50. f. 2.

Babiroussa, Buffon, H. N. xii. 379, t. 48.

Hab. Borneo; Malacca?; Celebes; Ceram; Timor; Java; Sumatra; New Guinea; New Ireland (*Fitzinger*).

Fam. 2. DICOTYLIDÆ.

Teeth 38:—Cutting-teeth $\frac{2-2}{3-3}$; canines $\frac{1-1}{1-1}$; premolars $\frac{3-3}{3-3}$; molars $\frac{3-3}{3-3}$. Tail short. Teats 2.

Chœropotamidæ, Owen, Odont. 559 (not characterized).

See description of dentition (Owen, Odont. 560).

Dicotyles, Cuvier, Règ. Anim. i. 237, 1817; F. Cuv. Dent. Mamm. 210, t. 86; Owen, Odont. 559; Baird, Mamm. N. A. 627, t.; Fitzinger, Setigera, 429, 1864.

Notophorus, Fischer, Zool. 1819.

These animals do not breed with the Domestic Pig, or any of the genus *Sus*. They have not been domesticated, and very rarely breed in confinement. The two species, a male (*Dicotyles labiatus*) and female (*Notophorus torquatus*), bred together in the Zoological Gardens, 1864; they have only two teats, and have two at a birth.

Mr. E. Gerrard, in the 'Catalogue of Bones in the British Museum,' has pointed out that the Collared Peccary has six and the White-lipped Peccary nine caudal vertebræ (p. 289).

M. F. Cuvier, in 'Dent. Mamm.,' observes that his description of the teeth is taken from the Peccary (*N. torquatus*), and the figure from the Tagassu (*D. labiatus*); and he continues, "The hinder molar of the lower jaw of *D. labiatus* is terminated by a single tubercle as large as the others, and not by three small ones."—*Dent. Mamm.* 211. I cannot see any difference in the form of the crown of the last grinder of the two species. The teeth, like the skull, are much the largest in *D. labiatus*.

1. NOTOPHORUS.

Skull—side of the face in front of the orbit dilated, spread out, deeply concave beneath; the longitudinal ridge on the cheeks nearly